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Trukese Material Culture

FINAL REPORT of F. M. LeBar

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TRUKESE MATERIAL CULTURE

By

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Yale University
1949

PREFACE

The writer lived on Truk as one of a team of five investigators from July, 1947 until January, 1948. The other members of the team included Dr. Isadore Dyen, who worked on the language; Dr. George P. Murdock and Mr. Ward Goodenough, who worked on social organization and religion; and Mr. Thomas Gladwin, who worked on personality development and the life line. The writer confined his efforts to material culture and economics.

The team settled on one of the smaller volcanic islands, Romonum, in the western part of the lagoon, and the bulk of the material presented in the present paper was obtained on that island. A few weeks were spent at the end of the field trip visiting the other high volcanic islands within the lagoon, in particular Tol, Pata, Udot, Fanapenges, Uman, Fefan, and Moen, in order to check the material gathered on Romonum against the general picture as it obtains on these other islands. This survey indicated that materials, techniques, and artifacts are well standardized throughout the high islands within the lagoon. To be sure, the easternmost islands, Moen Uman, and Fefan, evidence a greater degree of acculturation due to the concentration of Japanese administrative facilities in that area, but native traits of material culture, when present, appear to be identical with those found on the western islands. Some differences in terminology do exist, however, between the eastern and western islands.

It should be emphasized that the data presented in this paper pertain largely to the high volcanic islands within the lagoon; unfortunately, lack of time permitted only a brief visit to the one inhabited reef island, Pis, where a cursory examination indicated that the general picture there is similar to that on the high islands. Differences in topography and raw materials available should, however, make for some significant differences in techniques and economy as between this low reef island and the high volcanic islands.

The methods used in obtaining data included participation in group activities, extended observation where possible, and scheduled interviews with selected informants. Interpreters were used at no time during the field trip; with the help of Dr. Dyen, a specialist in Malayo-Polynesian languages, a working knowledge of the language was gained in about two months and facility in hearing and speaking gradually improved until during the last few months it was possible to discuss techniques of manufacture using native conceptual terms, with little or no circumlocution. This situation was found to be extremely satisfactory, producing a larger body of material and, it is felt, making for much greater accuracy.

Extended interviews with selected informants were found to be highly rewarding, although having the weakness of possibly concentrating too heavily on too few informants. An attempt was made to meet this difficulty by cross-checking, but it is still felt that the material is weak in this respect,

i.e., that much of it was obtained from interviews with only one or two informants. Informants used for extended interviews were not chosen until about the fourth month of field work, when enough time had elapsed to afford a speaking acquaintance with most of the 230 people on the island and a ripening friendship with a few individuals.

One of the informants chosen, Kekkin, proved to be particularly intelligent and cooperative, and daily interviews were carried on with him over a period of more than two months. He is about fifty years of age, has been married several times, and has a number of grown children living on Romonum. His father was one of the two district chiefs of Romonum at the time of his death, and a master canoe builder and woodworker. He taught Kekkin these crafts and the latter is today considered one of the best canoe builders on the island, having constructed over fifteen canoes. Kekkin has been to Palau and has some idea of the relation of Trukese culture to the cultures of other peoples. He is actively interested in the arts and crafts of his native islands and seems to take a genuine interest in explaining and demonstrating many of the techniques which have all but disappeared.

Much of the information obtained from Kekkin was cross-checked with another informant, Kinôus, a man about forty-five years of age. This informant has a particularly keen mind, and is perhaps the finest woodworker on the island as well as an expert fisherman. A third informant, Simiron,

was used to some extent at the end of the field work. He is about fifty-five years of age and is considered a specialist in native lore. From him were obtained many details of magic and ritual associated with techniques of manufacture and economic activities. Details of plaiting and weaving were obtained largely by interviewing and observing a particularly intelligent female informant, Ioona, who is about fifty-five years of age.

The data presented in this paper deal primarily with material objects and with the raw materials from which they are made, the way in which they are made, and the uses to which they are put. A conscious attempt has been made to exclude from this presentation associated magical, ritual, and ceremonial beliefs and practices. In like manner, details concerning organization of labor, specialization by age and sex, exchange transactions, etc., have been excluded. It is felt that an adequate discussion of these latter categories must necessarily presuppose a discussion of the material objects concerned, including their method of manufacture and at least something of their use. But to attempt to treat all these aspects of culture at one time leads only to confusion. It is hoped, therefore, to present the data dealing with these other categories at a later date, discussing them in reference to the data contained in the present paper.

The attempt has been made throughout to present Trukese material culture as nearly as possible as it was

before European contact, a goal which it is obviously impossible to fulfill completely. Careful checking of the literature against observation and informants' statements can, however, result in a picture reasonably close to the original. Where it is possible to do so, old artifacts and techniques are contrasted with introduced substitutes and the attempt has been made throughout to highlight the effects of acculturation on Trukese material culture.

The writer wishes to thank the Office of Naval Research, and other participating organizations, for making the field trip financially possible. He also wishes to thank the officers of the Pacific Science Board in Honolulu and the various Naval Administration Officers on Hawaii, Guam, and Truk, for their courteous consideration and assistance throughout the field trip.

Special indebtedness is owed Dr. Peter H. Buck, whose publications on the material culture of various Polynesian groups have proved of inestimable value as a constant source of terminology, method, and procedure. The reader familiar with his work will recognize the extent to which it has served as both model and guide.

All floral identifications which appear in the paper were made by Mr. Clarence Wong of Honolulu, from collections made during November and December, 1947. The spelling of native words follows in general the orthography used by S. H. Elbert in his "Trukese-English and English-Trukese

Dictionary" with certain modifications made in the field by Dr. I. Dyen from a preliminary study of the language. The officials of Peabody Museum Harvard, Peabody Museum Salem, Bishop Museum, and the University Museum in Philadelphia, have made their collections of Truk material available for study at various times, partial results of such study being embodied in the present paper. Mr. Thomas Gladwin, at present Anthropological Advisor to the Naval Governor on Truk, kindly rechecked in the field a number of points which the writer failed to establish conclusively while on Truk.

Finally, to the members of the Yale CIMA team on Truk, Mr. Goodenough, Mr. Gladwin, Dr. Dyen, and in particular to Dr. Murdock, the writer expresses his appreciation for advice and helpful criticism.

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INTRODUCTION

Geographical Environment [1]

Truk is a complex atoll of volcanic origin extending from 7° 7' to 7° 14' N, and from 151° 22" to 152° 4' E. What can be considered as Greater Truk includes Truk proper, plus the low coral islands and atolls of Nama, Losap and Mortlock to the south, the Hall Islands to the north, and Namonuito, Puluwat, Pulusuk, and Pulap Islands to the northwest. The Truk atoll, the native name for which is cuuk,

1. Most of the information under this heading has been condensed from Hall and Pelzer (1946) and CAH, East Caroline Islands (February, 1944).

is irregularly circular in shape, ranging in diameter from 30 to 40 miles. It includes more than 100 islands, most of which are high volcanic islands of moderate size set within an encircling barrier reef composed of numerous low coral islets. Fourteen or more of the high islands support the greater part of the population, estimated at 9,000 to 10,000. The most important of these high islands are Dublon, Fefan, Moen, Tol, Udot, Uman, Pata, and Romonum. The largest, Tol, is over 4 miles long and rises to a height of 1400 feet. Only one of the low coral islands on the barrier reef is inhabited, namely Pis. The barrier reef is broken by about five principle passes.

The high islands within the lagoon are in general

heavily wooded with a narrow coastal belt of sand broken in places by mangrove swamps and fresh water swamps. The settlements are today located along the coastal belt. "The various high and low islands are surrounded by fringing reef-flats of varying widths, formed by corals. Coming from the sea, one meets first a live coral zone at the edge of the reef-flat. There follows a dead coral zone forming compact hard limestone, and finally a swampy zone consisting of dead corals mixed with coral sand and cemented into hard limestone. Atoll islands usually have high coral rock-strewn beaches facing the ocean and low sandy beaches facing the lagoon." (Hall and Pelzer, 1946: 2)

The climate is characterized by high and uniform temperatures with relatively high humidity. Precipitation is heaviest on the high islands, reaching a maximum during the months of April and May. The northeast trade winds prevail from November to April, the summer months being characterized by light and variable winds. Typhoons reaching considerable strength occasionally reach Truk.

The fauna is relatively limited. The rat and fruit bat are the only mammals native to the area. Lizards and sea turtles, as well as a variety of birds and insects are also present. Fish and other marine fauna are plentiful. The flora of the high islands is dense and varied and greatly exceeds that found on the low coral islands which in many

cases have little or no vegetation.

The People

The Trukese constitute a part of what is called the Micronesian race, closely related to the Polynesians. Certain Mongoloid and Negroid features are thought to be the result of Malayan and Melanesian contacts or affinities at some time in the past.

The population is divided into a number of matrilineal, exogamous sibs which function chiefly in regulating marriage. More important from a functional viewpoint are matrilineal lineages, the members of which trace common descent in the female line from a remembered ancestress. Lineages were, until recently, localized in hamlets; they own land, and the members of a lineage form the usual cooperative work group. Lineage chiefs constituted the highest political authority in most cases.[2]

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2. For a more extended treatment of Trukese social and political organization, see Murdock and Goodenough (1947).

History

Some elements of traditional history are contained in local island legends, a few of which speak of immigrations

from Kusaie. There are in addition a fair number of stories concerning inter-island fighting within the Truk lagoon. According to these stories the people of the coast made war over a long period of time against the arrogant mountain people. Finally the latter fled Truk and occupied the surrounding islands of Puluwat, Satawan, Namoluk, etc. At a later date a few of these returned to Truk.

According to Kramer (1932: 1 - 2), most early authorities assign the discovery of Truk to Alvaro Saavedra in 1528. Kramer, however, thinks that the islands were not discovered until 1565 by Alonso de Arellano and Lope Martin. The lagoon did not become well known until the first decade of the nineteenth century, when it was visited by Dublon in 1814. The Russians and the French sent expeditions to the area under Krusenstern, Freycinet, Kotzebue, Duperrey, Lütke, and Dumont d'Urville. Duperrey sailed among the Caroline Islands during the year 1824 and is credited with mapping the archipelago of Truk, thereby making it known to the outside world. Dumont d'Urville was the principle explorer of Truk, reaching the lagoon in 1838.

It appears that during this early period, and for some time thereafter, the Trukese were in contact with Guam and other islands in the Marianas due to the fact that the Puluwat islanders, who were expert sailors, regularly voyaged to Guam and back, taking with them items for trade in return

for which they brought back iron and steel implements. The Trukese were thus in possession of iron tools at a very early date.

The period of the whaling industry (1830-1860) brought more extended foreign contacts, although Truk was effected less than some other islands in the Carolines. It was not until around 1860, when the development of the copra trade stimulated imperialistic penetration, that Truk was greatly effected by foreign influences. The publications of the German investigator, Kubary, who resided in the islands in 1878-79 also helped to awaken interest in the area.

Germany administered the islands from 1899 until the beginning of the first World War when Japan unofficially took possession. The Germans confined themselves to setting up a trading office on Truk and encouraging the natives to plant more coconut trees for the production of copra. They also abolished warfare and introduced a money economy. It was during this period that the German investigator, Kramer, worked on Truk from 1906-07, in connection with the work of the Thilenius Southsea Expedition. He produced a large volume on Trukese culture, the first of its kind, and by far the best source extant.

The Japanese were by all odds the most potent acculturative factor on Truk. They were in the area from 1914 until the end of the recent war, and in relatively large

numbers. In 1935 there were approximately 2,000 Japanese on Truk and in 1945 something like 35,000 (including Okinawans). Hall estimates that something close to this latter figure had been maintained for the past ten years. By various administrative practices and also by maintaining numerous trading stores on many of the islands, the Japanese greatly influenced native life. Another important acculturative influence, the missions, began on Truk as early as 1879 and as a result the Trukese are today all nominally either Protestants or Catholics.

Trukese culture today, although altered in many respects by contact with Europeans, is still a going concern. Perhaps the greatest changes have taken place with respect to material culture where many of the old-time artifacts and techniques of manufacture have already disappeared or are rapidly dying out.

TOOLS AND UTENSILS

Introduction

In this section are described a number of tools and utensils considered to be functionally basic to the rest of the material culture. They are all old in the culture and the majority of them are still widely used, although in some cases their use alternates with that of introduced functional equivalents. With few exceptions, these basic tools and utensils are used in a variety of processes and techniques: those tools and utensils intimately connected with a single technique or process are in general described elsewhere under the appropriate category.

Basic artifactual tools in use today include a large number of introduced items including metal adze blades, axes, knives, saws, planes, brace and bit, chisels, hammers, needles, etc. However, a number of the old native tools are still in use, as shell scrapers and knives, basalt pecking and polishing stones, etc. Likewise, European contact has resulted in the introduction of many utensils, as cast iron cooking pots, tin bowls and plates, and iron coconut scrapers, although native-made wooden bowls, pounding blocks, food pounders, digging sticks, etc., continue in use.

Tools

Basalt grinding stone In former times wide use was made of

large basalt boulders located at the water's edge for grinding and polishing artifacts of shell and stone. The piece was rubbed back and forth over a well-worn surface on the boulder with frequent applications of water. These boulders, termed föyen kamaatten, were located at frequent intervals along the shore and were used by inhabitants in the immediate vicinity. These stones are still used occasionally, although grindstones of European manufacture have largely replaced them.

Shell knives and scrapers small bi-valve shells (pitik and nittum) are still used extensively for scraping wood surfaces and for cutting hibiscus and banana fiber lines. They are used just as found, or the outer edge may be fined down on the basalt grinding stone. A shell termed pwei (given by Elbert as pearl shell) was also fined down and used to slice breadfruit and other foods.

Basalt pecking and polishing stones Naturally sharp pieces of basalt are used to peck coral in making the coral food pounder (wyssys) and a rough piece of basalt serves to polish the finished piece. Sharp bits of basalt are also used to peck holes in shell and in coconut shell.

Coral file A piece of branch coral (ään) serves as a file in smoothing the inside edges of holes made in shell and coconut shell.

Pumice stone polisher Pumice stone (pito or matto), picked up on the beach, is used to polish wooden surfaces, as canoe hulls, canoe paddles, wooden bowls, etc.

Coconut fiber cord polisher For polishing round wooden objects, as the loom of a canoe paddle, a collar of sennit cord, termed muunu, is made by winding a length of cord about the fingers to form a core and dogging the working end completely around the circumference of this core, securing the end with a square knot. This collar is fitted over the loom and, grasped tightly in the right hand, is rubbed rapidly back and forth along the length of the loom.

Log and pole levers Wide use is made of the lever and fulcrum principle in moving heavy weights, as boulders, canoe hulls, wooden beams, etc. Logs and poles with stone or wood blocks are used and discarded afterward.

Suspended stone axe Informants on Romonum Island maintained that before the advent of steel axes and adze blades a technique known as nikŏutyn was used to fell trees. For this, a large basalt rock with a naturally sharp edge was selected, the edge further sharpened by pecking and grinding, and the stone then suspended from a limb of the tree to be felled. The rock, when pulled away and allowed to swing free would strike the

trunk with some force, gradually cutting its way through the trunk.

Needles Before the introduction of European needles, the Trukese used a coconut leaflet midrib needle with hibiscus fiber thread for ordinary sewing, as mosquito nets, items of clothing, etc. A green rib is obtained by pulling a leaflet from the butt end of the frond so that a bit of the main rib of the frond comes off with it. The leaf part is stripped away from the rib and is cut to a length of about 8 in. The part of the main rib attached to this piece is chewed with the teeth to make it flexible. The other end is sharpened to a point. The needle is then attached to the thread by utilizing one end of the thread which has not been twisted; the thread is placed alongside the needle and is drawn down until the non-twisted end of the thread is flush with the chewed end of the needle. They are held in place between the thumb and index finger with the needle on the left, and about 1/2 in. projecting above the fingers. The portion of the thread below the fingers is then grasped with the right hand and given a turn around the thumb and passed underneath both thread and needle such that it is held in place between thumb and index finger. It is then given a turn back over thread and needle, the projecting ends of thread and needle bent backward through the first loop around the thumb, held down

with the thumb, and the working end of the thread then pulled to tighten down on the knot.

The needle and thread, as described above, were used alone, or in conjunction with a bone punch, jɔ̈ɔ̈jtte. The latter was used to make preliminary holes when sewing tough material, as pandanus in the construction of the hat, saaim. The punch consisted of a naturally sharp bone obtained from an unidentified fish, inippar or sara.

A turtle shell needle (jɔ̈ɔ̈jtte) was used formerly in sewing together plaited pandanus strips in sail making. The needle was round in cross-section and fitted with a small hole at one end for the passage of thread.

Wooden punch Informants on Romonum Island were unable to state definitely what instrument was used to make holes in wood before the advent of the European bit and chisel. A few thought that a mangrove wood punch, possibly with a fire-hardened point, was pounded through such comparatively soft woods as breadfruit and hibiscus. All informants agreed that the pump drill (nikanen) was used only for working coconut shell and sea shell and was not used on wood.

Pump drill A pump drill (nikanen) was used to drill holes in coconut shell and sea shell. Informants on Romonum were able to supply sample specimens of this drill, which is no longer in use; the specimens agree in detail with those from

Puluwat and Satawan figured by Damm (1935: 72, figs. 165 and 166). Kramer (1932: 94), in his work on Truk, mentions what is presumably the same drill, which he calls liganen, but does not picture. (The shape of this drill is shown in fig. I).

Adzes

The general term used for adzes (sene) applies equally to metal adzes and adzes formerly manufactured by the Trukese. The techniques of making and hafting adze heads have been in disuse on Truk for some time, owing to the early introduction of metal blades. The Trukese often make their own hafts, however, and lash metal heads to them.

Today, the adzes in use comprise a straight-edged adze (tikkŏttik) and a spout, or canoe, adze, sene kuun. The latter is often hafted in such a way that it can be turned parallel with the haft, much as an axe; this arrangement is particularly useful for dubbing out the insides of canoe hulls and bowls. Informants state that both types of head and haft were present on Truk before the introduction of metal blades.

Head Quadrangular adze heads (tikkŏttik) were made either from a kind of compact, hard limestone formed from dead coral (etiniki) or from an unidentified shell, tŏ. The material was pecked with a sharp piece of basalt and ground on a large

basalt boulder grinding stone. There is no indication that basalt was ever used as material for making adze heads. (The typical shape of these heads is shown in fig. 2).

Spout, or canoe, adze heads (sene kuun) were made from a particular kind of shell (unidentified), according to Romonum informants. This type of head is not mentioned by Kramer but informants appeared well-acquainted with the idea and produced a sample specimen (see fig. 3).

Haft The haft (imwen sene) can be made from Macaranga (tuup), or from Thespesia populnea (pönö). The term for lashing the head to the haft is föötti. Fig. 4 shows typical hafts used for quadrangular straight-edged adzes and for canoe, or spout, adzes. It was not possible to obtain a specimen with authentic lashing, and informants were unable to describe lashing techniques used in former times.

Wooden Bowls

Wooden bowls (seeppi) from Truk have long been a favorite collector's item due to their fine workmanship and beauty of line. The smaller types are still made to some extent, but with the possible exception of a few specialists on Fefan Island, the art of making the larger ceremonial bowls has all but disappeared. Smaller bowls are made usually from breadfruit wood; the larger ceremonial bowls were made usually from Calophyllum inophyllum, rekic.

Small bowls The most common type of smaller bowl is termed föyjene; it varies in size but is usually characterized by flaring projections at either rim extremity (fig. 5). The inside and outside surfaces of these bowls are often painted with a red paint (appar) after which a smooth veneer consisting of grated and expressed Parinarium glaberrimum nuts (aais) is applied.

Double bowls Double bowls (seeppieppac), connected by a crossbar and cut from a single piece of wood, are mentioned by Kramer and were described by informants. They are essentially in the shape of two föyjene bowls connected by a bar which is placed on the shoulder for carrying purposes (see fig. 6).

Large bowls Large bowls (nuup), shaped like the smaller föyjene bowl, are used for everyday purposes and also at ceremonial occasions.

The largest of the bowls (uunong) was reserved solely for use in connection with the annual breadfruit feast (umusömwon) at which time cooked breadfruit was ceremonially transported in the uunong for presentation to the chiefs. These bowls are elliptical in shape at the mouth, with a keel-shaped bottom and range in size from 1 1/2 ft. to 6 ft. long. The larger of these bowls, when filled with breadfruit, require ten or more men to carry them, for which purpose they are

placed on a special support (wocang) which is placed on the shoulders. The bowls are painted red inside and out and coated with a veneer as described above for the föyjene bowls. The bowls were owned by lineages and were kept in the lineage wuut when not in use. (fig. 7 shows the typical shape of these bowls).

Digging and Husking Sticks

The digging stick (wȯt) is made from a hard, durable wood such as mangrove; Thespesia populnea (pönö) may also be used for this purpose. The stick is straight, with a maximum length of about 6 ft. and an average diameter of 1 1/2 in. It is pointed at one end and the other end section either unworked or shaped to a double-edged flattened surface, in which case the same instrument may also be used to husk coconuts. More often, the coconut husker, also termed wȯt, is a shorter stick picked up at random and discarded after use. Today, a sharp piece of iron stuck into the ground often serves as a coconut husker.

Coconut Grater

The coconut grater consists of a stool or seat with a projecting neck on which is lashed a grating element. Although the stools vary somewhat in shape they all have two legs and a flattened top surface which serves as a seat. (See fig. 8).

There were formerly two types of grating elements which were lashed interchangeably on the same stool. One type (feiir) consisted of a flattish piece of coral (föyrup) which was lashed on the neck of the stool, the stool then being termed wassan feiir. This type of grater was used for roots and tubers. The second type of grating element (pweiker or wetiken) consisted of half of a bi-valve shell (oteek or tȯ) which was lashed to the neck of the stool, the stool then being termed wassan pweiker or wassan wetiken. This grater was used for coconuts, since it was difficult to grate the concave coconut shell on the flat feiir grater. Today, a piece of denticulated iron takes the place of the pweiker grating element, but it is still lashed in many cases on the old-type stool. The feiir grating element has been replaced by a piece of tin punctured in many places, which is nailed to any surface.

Cross Beam Press

The liquid content of many vegetable substances is expressed in connection with a variety of techniques and processes. Much use is made in cooking of the milk expressed from grated coconut meat; various leaves, roots, and herbs are pounded and expressed to obtain dyes, medicines, etc; raw sugar cane is sometimes expressed to obtain a sugary liquid which is fed to infants. For all these purposes, a cross beam press (wycyyc) is used. (See fig. 9).

The press is set up in a number of ways. By one method, two stout unworked poles (inan, mother) are lashed together at one end to a tree or house post, at a distance of about 2 ft. above the ground; the opposite ends of these poles diverge slightly and rest on the ground. A cross beam (nöyn, child) is lashed athwart the two inan at a point where it will be far enough above the ground such that a wooden bowl may be placed beneath it. The topside of this cross beam is medially widened and slightly concave in order to hold the material to be pressed; the material is usually bundled in a piece of clean coconut stipule (eysses) or in a piece of cloth. One end of a long unworked pole (cooco) is then fitted under the joined ends of the inan such that its center section rests on the bundle of material to be pressed; the other end of this pole projects outward beyond the distal ends of the inan. To operate the press, one or two workers sit or lean on the distal end of the cooco, thus bringing the center section of this pole downward with some pressure on the bundle of material; the liquid is expressed and drips down into the bowl beneath.

By another method, the inan are dispensed with, the nöyn being lashed to the tops of two upright posts and the proximal end of the cooco then being fitted underneath a convenient root or other stationary object.

Pounding Blocks

Roughly circular pounding blocks (nyyf) are used with coral pounders in preparing breadfruit and a number of other foods. These blocks, made usually from breadfruit wood, average about 14 in. in diameter and 2 1/2 in. thick. Formerly, use was also made of basalt pounding blocks; a slight depression was made in the center of the top surface by heating with fire and then pecking with pieces of basalt. These basalt blocks can still be observed but they do not appear to be in use at present. (The wooden blocks in use today are shown in fig. 10).

Food Pounders

The term for food pounders is wysyys. Those observed today on Truk are made from a kind of coral (atippo), although informants on Romonum Island stated that formerly pounders were also made from heavy varieties of wood, as Barringtonia racemosa (sôôn), and an unidentified wood, emwöses. According to these informants, the wooden pounders were made in sizes and shapes similar to the coral pounders being produced today. Although basaltic stones are available everywhere, the Trukese apparently never utilized this material in making food pounders; informants were ignorant of its use in this connection and observation on nost of the islands failed to disclose a single case of a stone food pounder.

Pounders are made according to a well-defined pattern,

differing mainly in the treatment of the head (See fig. 11).

The coral used for making pounders grows naturally in a rough cylindrical shape. A piece of this coral about 9 in. long by 5 ins. in diameter is obtained and shaped into a pounder by pecking (necenec) with a sharp piece of basalt. The piece is later smoothed down by rubbing with a piece of weathered basalt. The worker squats or sits before his work, which rests on a cushion or pad composed of a few dry coconut husks, an old palm leaf basket, or some other suitable material. The base is shaped first, followed by preliminary shaping of neck and body and final shaping of head. The final shaping of neck and body occurs last (See fig. 12). The neck and body are shaped by pecking off successive layers about 1/8 in. thick; the strokes are short and rapid, and in a direction away from the worker, so that the strokes fall on the side of the piece away from the worker, as he rotates the piece.

Breadfruit Scraper

The instrument used to scrape the green outer rind from breadfruit preparatory to cooking is made from a shell (ngingi, given by Elbert as cowrie shell) and is referred to simply as ngingi. Part of the lip and inner convolutions of the shell are cut away by pecking with a naturally sharp piece of basalt. One end of the shell is ground on a basalt boulder until a small hole, about 1/2 in. in diameter, is formed. The

edges of this hole are extremely sharp and the skin is removed from the fruit by scraping against these edges. The pieces of skin thus removed fall through the shell, where the inner part and some of the lip were removed. (See fig. 13).

Breadfruit Picker

Ripe breadfruit are removed from higher branches with the help of a long pole, fitted with a forked arrangement at the end, by placing the fork over the stem and twisting. This instrument, termed ias, is made from a hibiscus pole averaging 25 to 30 ft. in length. These long poles are obtained from Tol Island, the bark removed and the pole straightened by heating over a fire. The pole is then hung vertically from the branch of a tree and a heavy stone is tied to the bottom; informants state that the pole is left thus for a matter of days until thoroughly dry and straight. The finished pole is then sharpened to a point at one end, and a short stick of wood (any kind) about 1 ft. long is lashed diagonally at the same end. (See fig. 14).

Coconut Shell Flasks

Drinking water, palm toddy, and other liquids, were formerly kept in coconut shell flasks, pöörɔcɔn. Today, glass bottles have largely replaced these shell containers. A large variety of nut (nynpöör) is used for this purpose, a

nut that has fallen to the ground being preferred. The nut is husked, and a hole is made in the end of the nut containing the two eyes. The hole is made by pecking with a sharp piece of basalt. The hole is then enlarged to a diameter of about 1 1/4 in. by filing with a piece of branch coral. A length of mangrove wood is cut to a thin, spatula-like shape at one end and, by insertion through the hole, is used to scrape out the meat inside. The outside of the shell is smoothed and polished by rubbing with a kind of coral, sosomai. Small holes are made on either side of the first hole for the insertion of coconut fiber cord for carrying purposes.

Climbing Bandage

Informants state that since German times the Trukese have regularly cut a series of notches or steps (faniep) in the trunks of coconut palms, so that an individual, by using these notches as hand and foot rests, can easily reach the top of the highest palm. Formerly, they say, these notches were unknown, and a climbing bandage (efis) was in general use. The efis was made by winding a length of coconut fiber cord about hand and elbow a number of times, as in winding a hank of cord. The loose ends of cord at either extremity of the "hank" were knotted about the body of the "hank", the whole twisted once, and fitted over the feet.

FIBERS AND CORDAGE

Introduction

The Trukese make a variety of lines from hibiscus, banana, and seaweed fibers but it does not appear that the Trukese themselves have ever made much use of coconut husk fibers for cordage. Rather they have relied on imports from other islands, particularly Puluwat, and the sennit cordage obtained from this island is used very extensively on Truk for canoe making, house building, netting, etc. This fact is mentioned often in the literature and was confirmed by informants on Romonum Island who stated that the maker of coconut fiber lines is particularly vulnerable to the effects of black magic. This may explain at least in part the aversion of the Trukese to this activity; certain it is that sennit cordage is not made on Romonum at present nor could its manufacture be observed elsewhere on Truk. Techniques of working with sennit had therefore to be obtained from a few informants who could supply second-hand information.

Materials

Hibiscus bast fibers are obtained by soaking hibiscus poles in the sea for four to seven days. The thin outer bark is scraped from these poles with a knife, after which they are tied in a bundle and placed in the shallow water near shore, where they are weighted down with stones or some other

heavy object. This is done usually by women, who return after a sufficient lapse of time and strip the loosened bast from the poles, using the fingers. The fingers are used also to separate any pieces of outer bark which may remain stuck to the bast. The long strips of bast, from 4 to 6 in. wide, are then hung up in partial shade to dry. These strips of bast are used for a variety of purposes; if they are to be twisted to form lines, they are split with the fingernail into long thin strips, averaging 1/8 in. in width.

Banana fibers are obtained by removing the outer husk (pön) of the tree trunk. The inner layer of this husk is pulled off with the hands after which the remaining outer layer is pulled or stripped underneath the sharp edge of an unidentified shell (pwöjeenön) using as a working base the inner core (wäätik) of the trunk, which is discarded afterward. The thin fiber strips thus obtained are dried and pulled apart with the fingernail to form silk-like fibers averaging about 3 ft. in length.

Fibers for net making are obtained from a kind of seaweed or grass, Enhalus acoroides (jacökken), which grows near the shore. The plants are pulled up (sä) and the outside part of the leaves is stripped from the inner part using the fingers. This operation is done by women at the spot in the water where the plants are gathered. The inner strips of fiber are taken ashore and dried in the sun, following which they are split into thin lengths with the fingernail.

Sennit is obtained from the husks (pön) of green drinking nuts which are placed in an old basket and soaked in salt water for about one week. The loosened fibers (oren pöin) are pulled from the outer shell and beaten or pounded with a stick using a stone or rock as an anvil. This serves to separate the interfiberous material from the fibers, which are then soaked in fresh water and dried in the sun. When the fibers are ready to be used for cordage, they are picked over and those which are too short are discarded.

Cordage Techniques

Small-diameter lines of hibiscus, banana, and seaweed are formed by twisting on the bare thigh. Hibiscus line is usually formed from a strand of fiber about 1/4 in. wide. This is split for most of its length, leaving about 5 in. on one end unsplit. The worker, sitting with the left leg bent under the body, takes the unsplit end in the left hand and places the split end on the bare thigh just above the knee. The two ends are rolled forward under the right palm with slight pressure so that each strand is twisted somewhat although the two strands remain separate. At the completion of the forward roll, the direction is quickly reversed and a backward roll, made with considerable pressure, twists the two strands together into a left twist. The two strands are twisted throughout their length by repeated rolls, the unsplit end being split by pulling against the knee. This

twisting technique is termed kȯna. The strands are kept going by placing new ones parallel and incorporating into the twist.

Banana and seaweed lines are made in the same way except that two separate strands are used instead of a single split strand. These lines, in all cases observed, proved to be two-ply twists.

Two-ply sennit cord is used extensively on Truk for a variety of purposes, from canoe and house lashing to making turtle nets. The individual plies are made by rolling fibers on the thigh, a process similar to that described above for hibiscus lines. It is not clear whether the two plies are twisted together on the thigh or with the fingers to make the cord. It is stated that three-ply sennit cord and rope is made by braiding, piti. This is said to be done by tying the three plies to a beam overhead, whereupon three men sit beneath and pass the plies around to the left. The term, nyn, is stated to apply to smaller-diameter sennit, while the term, sän, is reserved for larger rope.

Two-ply sennit is traded in to Truk in hanks (sen) of about 200 ft. If extensive lashing is to be done, as in canoe making, a convenient hank of sennit is first prepared by a process known as peiȯr. (See fig. 15). The two loose ends of a long length of sennit (either doubled or single) are tucked tightly between the upper left arm and the body. The line is then made into a compact ball or hank by winding

on the extended left hand, palm facing the body. The line passes behind the thumb, in front of the index finger, behind the middle finger, and in front of the third and fourth fingers; then around behind the hand, coming up this time in front of the thumb, behind the index finger, and crosses in front of the second, third, and fourth fingers. The winding is continued, alternating each time between the two patterns. When completed, the hank is removed and the looped end is given two complete turns about the hank, passing once under the standing part of the turn each time. The end of the cord which had been held by the left arm is thus left hanging free, and when the job of lashing begins, this end, now the working end, is grasped with the right hand and a sufficient quantity of cord is pulled from the hank. The turns about the middle of the hank prevent the whole from coming apart and also enable the worker to pass the hank through a small space.

PLAITING

Introduction

Mats and baskets of plaited pandanus and coconut palm leaflets are still used everywhere on Truk and the techniques of manufacture are thus readily available. Plaiting is largely women's work although men working in the bush often plait temporary coconut leaf baskets in order to carry home produce. Coconut palm leaves are used for all types of baskets, fans, and wall mats. Young unopened leaves, termed uput, are often used for making fans and the finer types of baskets. Pandanus leaves are used for mat making, and are bleached before being used.

Baskets, wall mats, and fans are made on all the islands, but the manufacture of pandanus leaf mats is restricted largely to Pis and Uman, due possibly to a lack of the necessary raw materials on the other islands. The mats made on these two islands are traded or sold to the other islands within the lagoon.

Wall Mats

Mats plaited from coconut palm leaves, termed kini, are used as temporary or permanent wall coverings on houses, and are also placed over the open hulls of sailing canoes when these are in port or drawn up on the beach. The center section of a coconut palm frond about four feet long is used.

The leaves are plaited usually in a twill pattern, and are not opened up but left in a folded condition, as in nature. A mat about two feet in width can be obtained by this method.

The leaflets on the left side of the frond midrib are each bent across the midrib to the right side, and plaited with the leaflets on that side. Top and bottom edges are made by bending leaflets a quarter turn to the right and continuing in the plait. The outer edge is constructed by bending all leaflets running downward a quarter turn to the right, as A and B (See fig. 16) and passing the ends underneath a crossing leaflet, as at points 1 and 2. The ends are then brought back in the same direction as C and D. All leaflets are then incorporated in a three-ply braid which is carried out beyond the top edge of the mat to form a tail. The end of the tail is tied in an overhand knot and thus secured.

Two such mats are often combined by joining the distal, or outer, edges in a three-ply braid, as illustrated in Kramer (1932: 163, fig. 133).

Baskets

Temporary field baskets The simplest of the baskets is that termed fŏyfŏyirŏkuum. It is built up around the thing to be carried, usually coconuts or packages of food, and is cut or broken open when the contents are to be used. It is a temporary basket and is discarded after use.

A green coconut palm frond is left in the sun for the better part of an hour, informants stating that this renders the leaflets more pliable. A section of the frond toward the butt end is used, the length depending on the length of the basket desired; a length equal to nineteen leaflets is about average. The leaflets are not split or cut, and are plaited flat. The worker sits with the section of the frond on his lap, butt end facing left. He first check-plaits a triangle on the side of the frond nearest him. (See fig. 17). Number 3 leaflet is bent back at about a 90 degree angle, over number 2 and under number 1. Number 5 leaflet is bent back over number 4, under number 2 and over number 1. This pattern is continued to the end, skipping a leaflet each time, so that a plaited triangle results. The two leaflets at the apex of the triangle are knotted together to hold the triangle in position.

A similar triangle is plaited on the outside side of the frond section and the contents of the basket are placed in the center, between the two triangles. The basket can also be plaited from an entire frond, cutting the plaited section from the rest of the frond after the triangles have been completed.

Next, the piece is turned endwise with the butt end facing the worker; it is held in an upright position by being placed between the outstretched legs. With the basket in this position, one leaflet from each of the two pairs of leaflets

which were knotted at the apex of the triangles extends in the direction of the worker. These are grasped, one in either hand, and a three-ply braid is begun down the two legs of the triangles facing the worker, incorporating into the braid the free ends of the leaflets, first from one side, i.e., one triangle, and then from the other. The new elements are brought in on top of the ply each time. This kind of braiding is termed fiires. The braid is carried out to a short tail, the end of which is secured by twisting a few of the component leaflets about the body of the tail and tightening down with an overhand knot.

The piece is reversed and the other two legs of the triangles are braided together in like manner. The braided tails are knotted together to form a handle, and the basket is carried in the hand or slung on a shoulder pole.

A variation of this basic basket is the type of basket called cykycapwen (from cyk, the general term for basket, and capwen, meaning to open, as a box or chest). This basket is made in the same way as the fŏyfŏyirŏkuum without, however, including the contents during the process of manufacture. After completion, the frond midrib is split apart with a knife so that an open-mouthed basket results. This basket is used in gathering crops, as turmeric, fermented breadfruit, etc. It is carried singly in the hand or slung on a shoulder pole.

A somewhat similar, but more permanent basket, is that termed äppimar. It is made in much the same way as the föyföyirökuum except that the bottom is formed by a plaiting technique instead of a braiding technique. A section near the butt end of a green coconut palm frond is utilized, the average length being equal to about seventeen to twenty leaflets. The work proceeds from left to right with the butt end of the frond section on the worker's left. Two triangles, one on either side of the frond midrib, are check-plaited in the same way as described for the föyföyirökuum. Each triangle is held in position temporarily by bending back a leaflet on each leg of the triangle (for both triangles) and forcing it underneath one of the plaited leaflets.

The piece is turned endwise and held in an upright position by placing between the outstretched legs. In this position the bottom of the basket is made by check-plaiting the loose leaflets of both triangles, first on the side facing the worker and then, reversing the piece, on the opposite side. The plait is begun at the corner of the piece nearest the worker, working up toward the apex. The plait is begun with the pair of leaflets second from the end, or corner, and the plait is two checks in width. The temporary holding leaflets, mentioned above, are undone and incorporated in the plait. The last pair of leaflets, before reaching the apex of the triangles, is tied in an overhand knot. The piece is reversed and the two legs on the opposite side are check-

plaited together in like manner, knotting the last pair of leaflets before the apex as above.

Next the piece is turned broadside to the worker and the loose leaflets extending inward from either side, as a result of the plaiting process, are incorporated in a three-ply braid. The braid is begun at the apex with two leaflets, one from each of the two overhand knots mentioned above, and progresses downward toward the base. New leaflets are added alternately from either leg of the triangle, and are brought in on top of the ply each time. The braid is carried out to a short tail, the last leaflet being wrapped a few times around the tail and tightened down with an overhand knot.

The basket is turned around, and the loose leaflets on the opposite side are likewise incorporated in a three-ply braid. The frond midrib is next split, forming the mouth of the basket. Instead of a simple splitting process, the longitudinal center section of the rib may be removed by making two parallel cuts in one end and pulling away on the outer side of each cut, thus leaving the center core to be discarded. This makes the basket lighter and easier to manage. The two braided tails, one on either side of the basket, are tied by their ends to the rim, forming handles by which the basket may be carried in the hand or on a shoulder pole. This basket is used for gathering breadfruit, copra, etc., and may be used a number of times before discarding.

Permanent field basket A more permanent type of basket is that termed cykyseippan. As the name indicates, this type of basket probably came into the area from Saipan and informants generally held this to be the case. This basket, and the type föyföyirökuum, are the two most often seen in use. The cykyseippan basket is used primarily in gathering crops, in particular breadfruit and is most often used in pairs, one basket on either end of a shoulder pole (jööwefar). This pole has a raised knob on either end to prevent the baskets from slipping off. The baskets may be from one foot to two or more feet in diameter.

A section of green coconut palm frond is used, varying in length according to the size of the basket desired. In this case the leaflets are not opened out flat (öretti) as was the case for föyföyirökuum, cykycapwen, and äppimar, but are left folded as in nature, a condition termed nuumi. The basket is begun in a manner similar to föyföyirökuum, by check-plaiting two triangles; in this case, however, the triangles are not joined to make a single basket, but each is used to make a separate basket. For this reason the frond midrib is split, either before or after the plaiting of the triangles. One of the completed triangles is taken first and bent in a circle, with the split, or rough, part of the

midrib on the inside. The two ends of the triangle are overlapped and bound together using a thin strip pulled from the midrib. The resulting V-shaped opening is then closed up by check-plaiting. (See fig. 18).

The bottom of the basket is made by a braiding technique similar to that employed in making the föyföyirökuum basket. Adjacent leaflets, at points A and B in fig. 18, are tied together in an overhand knot. Taking one leaflet from each pair, and working toward the worker, a three-ply braid is made by incorporating new elements alternately from right and left. The braid is carried out in the form of a tail which is secured at the end as for föyföyirökuum. The piece is next reversed and the remaining half of the bottom is braided in the same way, by starting with the remaining two leaflets of the two knotted pairs of leaflets mentioned above, and continuing the braid in the form of a tail. The tails are then secured to the rim of the basket. The other of the original two plaited triangles is then made into a basket in like manner and the two fastened to a shoulder pole.

Woman's fish basket The widely-used woman's fish basket (kumar or sewa) is plaited from a section cut out of the center of a green coconut palm frond. This section averages about twenty-three leaflets in length and makes a basket approximately 15 by 10 in.

The leaflets on both sides of the frond are prepared

for plaiting by first splitting each one down the center of its midrib, a process termed äsätta. The split in the midrib is obtained by snapping the tip end of the leaflet backward and downward, after which the thumbnail is inserted in the resulting split and run out to the end of the leaflet. The resulting halves (each about one half inch wide) are then pulled apart as far as the frond midrib, but are left attached to it. Next the two halves of each leaflet are carefully overlapped and split medially down their entire length with the thumbnail, thus forming four quarter-inch elements, all still attached to the frond midrib. The two ribless elements are pulled from the frond midrib and discarded. A split is started at the butt end of the frond midrib, and a narrow section of midrib is pulled off on one side. including the set of prepared leaflets on that side which are attached to it. A similar narrow section with attached leaves is removed from the other side. The result is two flexible sections, each with a set of narrow leaflets which can be plaited into a tight, compact basket.

These two sets of leaflets are plaited in the form of two separate triangles, which are then joined to form the basket. The worker sits with legs folded underneath her and the work is done largely on the lap, frequently holding it up against the belly for support during the plaiting. The triangles are plaited in the same way as described for föyföyirökuum. It is usually check plaiting (föyweniwen)

although twill (fö̈ywo) is also occasionally used. Check is always used near the bottom, however, to prevent the escape of small fish. The completed triangle is temporarily held in position by bending down a leaflet on either leg, as described for the ä̈pimar basket, or else by taking a separate leaflet, passing it about apex and base, and knotting.

The tip end of one of these triangles is then joined to the butt end of the other (fig. 19) by placing them in position and plaiting the intervening inverted V-shaped space between the opposing legs of the two triangles. The result, in the form of a large truncated triangle, is shown in fig. 20.

The worker now constructs a temporary device for holding the plait in place along line CD (see fig. 20) during the ensuing operations. Beginning at the left, all leaflets running to the right are bent downward a quarter turn to the right, each leaflet being placed under the next adjacent leaflet to the right. (See fig. 21). This operation is termed iitta. The last two leaflets on the right are not so bent, but are made into a loop, the working end of which is made into a bend and the bend passed part way through the loop, after which the loop is tightened down on the bend.

The piece is now bent in the middle, along line AB in fig. 20, the two ends joined in the same way as for the original joining of the two triangles, and the V-shaped space closed by plaiting. (See fig. 22). The iitta process, described in the preceeding paragraph, is then continued

around the entire bottom edge of the basket.

The bottom of the basket is made by incorporating loose leaves, from both longitudinal bottom edges, into a three-ply braid. The basket is placed upside down, i.e., frond midrib part downward, on the ground in front of the worker, with one end of the basket facing her. She begins at the end farthest from her and works toward the body, using those leaflets which were not bent downward in the iitta process. (See fig. 23). The braid is continued out to the full length of the leaflets to form a tail (sening) which is secured by tying an overhand knot in the end.

Next the basket is reversed, and again starting at the end farthest from the body, the worker proceeds to construct another three-ply braid, this time using those leaflets which had been bent downward in the iitta process. The leaflets are bent upright again as they are incorporated in the braid. (See fig. 24). This braid is slightly different from the first braid which underlies it, in that new elements are brought in underneath the ply, whereas in the first braid they are brought in on top of the ply. This second braid is continued out to form a tail as in the preceeding case. The end is knotted and each tail is then brought up along the body of the basket and kept there by thrusting the knotted end through between two checks just below the rim of the basket.

The kumar basket is made and used by women. It is

most often used as a receptacle for fish by women wading or swimming about in the shallow water offshore, where they net and spear smaller varieties of fish. The basket is worn usually just above the buttocks and is held in place by a line passed around the waist. When the woman gets into deeper water the basket may be moved up on the shoulders, thus preventing the escape of any fish contained therein.

Woman's weaving basket This basket, termed ǣppeas, with a circular rim and four-cornered bottom, is widely used around the house as a receptacle for weaving materials and other household odds and ends.

Like the kumar basket, it is plaited from a section cut out of the center of a green coconut palm frond. In this case the section is somewhat longer, averaging about forty leaflets in length. The frond midrib is split down the middle and one half of the section is discarded; only one half of a frond section is used in making this basket. The folded leaflets are each split down the middle (not the rib, as in the case of the kumar basket) and the ribless elements pulled from the frond midrib and discarded.

The frond half-section is now placed with the butt end to the left as the worker faces, with the leaflets running to the right. Each leaflet is then bent a quarter turn downward and to the right underneath the one ahead of it, a process similar to the iitta process described for the kumar

basket. The last two leaflets on the right, however, are not so treated but are tied together to be used later.

Each leaflet is now split down the midrib by the ässätta process described under the kumar basket, the split running down as far as the quarter turn in the leaflet made during the iitta process just described.

The piece is turned around so that the leaflets again face away from the worker, with the butt end this time on the right. Beginning on the right, the leaflet elements are check-plaited by bending each odd-numbered element a quarter turn to the right underneath the adjacent even-numbered element. The last two elements on the left are left unplaited. The basket is built up by working back and forth in this manner, using either check or twill.

When the necessary depth has been attained, the bottom, or distal, edge is temporarily secured in the same way as described for the kumar basket, i.e., by the iitta process. The piece is folded in upon itself to form a circle and the two ends secured by utilizing the two end elements which were not incorporated in the plait; these are wrapped around the juncture and knotted. The remainder of the body of the basket, i.e., the V-shaped space resulting from folding the piece in the form of a circle, is completed by plaiting together the loose leaflets on either side, as described for the cykyseippan basket. The remainder of the bottom edge is then secured temporarily by continuing the iitta process.

The bottom of the basket is plaited in a four-cornered shape. To commence the first corner, any two adjoining elements along the bottom edge are chosen (see fig. 25). One of these, 3a, running to the right, has been bent downward during the iitta process and the other, 4b, running to the left, is unbent. The former is straightened out, and both leaflets are then bent inward toward the center of the basket. Element 5b is then plaited diagonally toward the left, over 3a and under 4b. Then 2a is unbent and plaited diagonally to the right, overlying 5b. 6b is plaited to the left over 4a (which has been unbent), under 3a, over 4b, and under 3b. 1a is then unbent and plaited to the right, overlying 6b, etc. This check plaiting of the corner continues in for five rows and is temporarily secured by bending back the middle leaflet and forcing it under a few checks. Those elements which are plaited diagonally toward the left are bent down inside the basket when they reach the opposite edge; those plaited diagonally to the right, directly overlie those running to the left, and hang down outside the basket when they reach the opposite edge. In both cases, the loose ends of all elements are cut off even with the plait when the basket has been completed.

The worker moves to the left along the bottom edge of the basket for a distance of six leaflets, where another corner is commenced. This is constructed in the same way as the first corner. The other two corners are completed in the

same way. The bottom is now complete except for a diamond-shaped space in the middle. This is filled in with check plait by undoing the temporary holdings at all corners and working inward equidistantly from all four points.

Fans

The fans (saipö) observed on Truk today, and those reported in the literature, are plaited from coconut palm leaflets; they are undecorated and have no handle other than the frond midrib ends which project slightly at the base. They are most often pentagonal in shape, resembling a diamond with the upper point removed.

Two separate sections of frond are used in making the saipö, these sections usually being taken from the small end of a frond and preferably from a young frond near the top of the tree. These sections are cut to an average length equal to four or five leaflets. In each case the bottom side of the frond midrib is shaved down slightly and the midrib of each leaflet is then split (äsätta) and the resulting two leaflet-halves are placed one on top of the other and split lengthwise, after which the ribless elements are pulled from the frond midrib and discarded.

The two sections are placed together so that the inner sides of the leaflets of one section face those of the other section. In this position, with the leaflets spread out, the midribs of the two sections are bound together. The

resulting piece is then turned so that the leaflets extend above and below the frond midribs instead of laterally as before. Taking those above first, the leaflets on the right, i.e., the upper leaflets of the righthand frond section, are alternately crossed with those on the left. (See fig. 26). The piece is turned over, and those leaflets which had extended below the frond midribs are treated in like manner. The worker now proceeds to plait the body of the fan.

With the piece still in a vertical position, all those L leaflets which had been brought over to the right are bent a quarter turn in a direction away from the body, and twill plaited together. (See fig. 27). Moving up from the base, the bend is made progressively further out from the frond midribs in order to obtain a flared or diamond shape. The twill pattern is obtained by plaiting alternately over and under two elements; these two elements are always composed of one each from the bottom and top side of the frond midrib. All the R leaflets which had been brought over to the left side are treated in like manner.

The result of plaiting both sides in this manner is as shown in fig. 28. The loose leaflets shown are twill-plaited to form the remainder of the body of the fan, and the top edges formed by bending the loose ends of the leaflets a half turn to the opposite side and tucking back into the plaiting according to the pattern.

Pandanus Mats

Pandanus sleeping mats (kiekki) are made by women from the leaves of an uncultivated pandanus (faceniwön) which grows along the shore. Green leaves, averaging about 6 ft. long, are used, and the barbs along the edges of the leaves and along the length of the leaf midrib are usually removed at the site where the leaves are gathered. The process of removing these barbs is called esiinenö and involves twisting together a few strands of coconut fiber or hibiscus bast fiber to form a light thread; this thread is tied between the index and middle fingers of the right hand and, after making a small tear with the fingers at the butt end of the leaf, the thread is inserted and pulled down the entire length of the leaf, thus removing a narrow strip with barbs attached along one edge. The process is repeated on the opposite edge of the leaf. By the same process the leaf is cut away on either side of the midrib, the result being two barbless leaf strips, each about 1 in. wide and up to 6 ft. long. A simple instrument (ammatte) can be constructed for this purpose by substituting a small forked stick for the fingers; the thread is then tied across the two arms of the fork and the instrument used in the same way as described above.

The worker usually ties the prepared leaves in a bundle and removes them to her dwelling, where further preparation and actual plaiting will be done. Today, the leaves

are placed in hot water for about fifteen minutes for the purpose, according to informants, of hastening the bleaching process by which the leaves are spread out in the sun for a period of four to seven days. Informants stated that formerly the hot water treatment was omitted. When dry and white, the leaves are gathered up and made into long bundles of fifty or more leaves to a bundle. One leaf is dogged around the entire length of the bundle to prevent it from coming undone. The bundles are then stored in the house until used.

Mats are made in various grades; the finest, termed nippa, is plaited from elements averaging only 1/4 in. wide. These are obtained by cutting the original 1 in. wide leaflets in half lengthwise and then folding the resulting halves lengthwise. The crease is fixed in the folded leaflets by rubbing the crease well with the edge of a small bi-valve, eeôêr. A second grade, termed nicop, is plaited from 1/2 in. wide elements obtained by cutting the original leaflets in half lengthwise; these elements are not folded. The third grade is termed nificinap, and is plaited from elements comprising the original 1 in. wide leaflets.

The plaiting of pandanus mats is termed föyföy, the same term as that employed for plaiting coconut leaf baskets and fans. The process consists of interweaving two sets of elements, or leaves, which are added in pairs, the elements in each pair being placed at right angles to one another. In the description of the process, those elements which run

in a direction to the right as the worker faces are termed dextrals; those which run in a direction to the left as the worker faces are termed sinistrals.[1]

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1. The terminology used here is that developed by Buck (1930: 166).

If the worker is using narrow, 1/4 in. wide elements, it is necessary to commence the work by squatting and plaiting on a board or some other hard surface, holding the work steady with the toes of one foot. Once the commencing section is well started, the foot can be removed and the work continued on any surface.

The bottom left corner of the commencing section is begun first, by giving the first sinistral a full turn about the first dextral. (See fig. 29). The next two elements are added and S1 is bent a quarter turn to the right underneath S2. (See fig. 30). This turn marks the beginning of the left edge of the commencing section. The third set of elements is added, and S2 is bent a quarter turn underneath S3. (See fig. 31). The new sinistral is added each time by lifting up alternate dextrals to make a shed. New sinistrals and dextrals are added in this manner until the required width of the commencing section is attained. The width of the sections varies according to the size of the finished mat; for a mat 6 ft. wide by 6 to 8 ft. long, the sections may average about 1 1/2 ft. in width.

The commencing section is then continued for the full length of the mat by adding new sinistrals and dextrals as before; a straight longitudinal edge is maintained by continuing the diagonal working edge from left to right, dropping the top dextral and picking up a new dextral from below each time. (See fig. 32). The right edge is defined by bending dextrals a quarter turn to the left (fig. 32).

A second section is then started, still on the right edge of the mat, by continuing to bend unplaited dextrals a quarter turn to the left and plaiting them in with the pattern of the first section. The left edge of this second section is defined in a manner similar to the right edge of the first section. A number of such sections can be built up, according to the desired width of the completed mat and also the length of the destrals. New elements can be added, however, by overlapping and continuing in the general pattern of the plait.

The finishing edge is constructed by bending successive dextrals downward and incorporating them in the plait for a short distance, after which any loose ends are cut off. (See fig. 33). The mat is turned around and the original commending edge is treated in the same way.

Finally, the corners are secured from unravelling by taking the loose element at each corner (as A in fig. 33) and bending it a half turn inward, about the crossing element,

after which it is tucked under the nearest plait and cut off even. A sharpened piece of coconut leaf rib may be used to pry up a plait in order to force the element underneath it.

Most mats are plaited in check, although the nippa may be plaited in twill. Informants stated that the Trukese have never used dyes to obtain decorative effects in mat plaiting.

WEAVING

Introduction

Weaving was at one time one of the chief occupations of women on Truk and the finer products of the loom constituted one of the chief items of trade with neighboring low islands. Informants on various islands within the lagoon seemed to agree that the best of these fabrics were woven by women on Pata Island and Romonum Island. Today, weaving has all but disappeared although it has been revived somewhat by the United States Commercial Company's policy of encouraging the production of handicrafts. But all clothing and other fabrics used by the Trukese themselves are today made from imported cloth.

Fabrics were woven entirely with hibiscus and banana fibers. Ordinary items of clothing, mosquito nets, boat covers, and food strainers, were woven with hibiscus alone, usually white but occasionally dyed black. The finer types of men's cloaks and loincloths were woven entirely with undyed banana fibers. The finest women's wrap-around skirts were woven with both hibiscus and banana, and intricate patterns were obtained on these by combining undyed banana and hibiscus with hibiscus dyed black.

On Romonum Island it was possible to find about eight older women who knew some or all of the processes of weaving. Of these, about three knew all the processes, i.e., preparation

of materials, warp winding, warp mounting, and actual weaving. It was thus possible to observe all of these processes in actual operation.

Materials

Hibiscus bast fibers are obtained by techniques described under "Fibers and Cordage." If the bast is to be used for weaving, it is split with the fingernail into long thin strips averaging 1/8 in. in width. These strips are then tied together to form a continuous line. The knot used in this case (puken sinifö) is shown in fig. 34. Long continuous lines of hibiscus fiber knotted together in this fashion may be used for weaving purposes, in which case they usually constitute the warp. Depending on the kind of weaving to be done, the lines are dyed black or used in their natural color. In either case each line is wound on the hand into a hank, the size of the hank depending on the length of the line. In winding the warp, a single hank is seldom sufficient, and a number of hanks may be combined by utilizing the knot (puken sinifö) as described above. In the case of warp winding for involved patterns, where black and white warp threads are used and where both hibiscus and banana warp threads are also sometimes used, hanks of different material and different color are utilized at different times during the winding, according to the pattern.

Banana fibers for weaving are obtained from only a

few species of banana, those termed uucuaja and appaap being considered the best. The fibers are tied together to form long continuous lines which are wound into hanks in the same way as hibiscus fibers. In order to facilitate this process, individual banana fibers are lashed on a reed or hibiscus wood pole (ninimwun) about 5 ft. in length. A set of fibers is lashed at either end of the pole, overlapping in the middle; the lashings are relatively loose so that individual fibers can be pulled from the pole as needed. In use, the pole leans up against the side of the house or room, the worker sits at the foot of the pole and pulls the fibers from their lashing one at a time, starting with the bottom set and then reversing the pole and doing the top set.

Individual fibers are arranged for incorporation into a long line by a technique termed wiwi. From five to seven individual fibers are pulled from the ninimwun, and are held together as a set by putting an end of each in one side of the mouth and holding between the teeth. Another set of fibers is arranged at the other side of the mouth, and still a third set in the center. The fibers in each set are pulled out to their full length and the ends cut off even with a piece of glass (formerly with the half of a bi-valve, pitik). Each set is then taken in turn, pulled between the lips to dampen it, and tied in a series of about three overhand knots spaced equidistantly throughout its length. One end of each set is then placed on the bare thigh (right thigh) and the

set twisted slightly by a few forward rolls underneath the right palm. This action is termed munöttyn. The sets are then tied together to form a continuous line. The knot used for this purpose (puken uuc) on Romonum is similar to that used in knotting hibiscus fibers (puken sinifö). Kramer (1932: 199) gives a slightly different knot for banana fibers, very similar to the old German weaver's knot. A long line is built up in this way, by working with three sets of fibers at a time, which is then wound on the hand into a hank and kept in the weaving basket (äppeas) until ready for use.

The Loom

The loom (tyr) used on Truk may be characterized as a horizontal tension loom. In its simplest form it consists of a cloth beam (pappen fanimas), weaving sword (öpyyp), single heddle (ngyyng), shed stick (räöcö), lease rod (yryyt), and warp beam (pappen fannö). There is in addition a wooden shuttle (äsäp). These loom elements are combined as a functional unit by the warp which, after being wound, is stretched from cloth beam to warp beam and the remaining elements then added in their proper positions. (See fig. 35). Once set up in this fashion, warp and loom elements can be rolled up and moved if desired.

In practice, the warp beam is lashed to two upright poles (pwiisön tyr) which rest on the ground or wooden floor and are in turn lashed above to a house beam or some stationary

object. The warp beam is situated about 1 1/2 ft. above the ground or floor, the warp and remaining loom elements extending horizontally the length of the warp to the body of the weaver, who sits on the ground or floor with legs outstretched. The opposite, or cloth beam end, of the warp is attached to the body of the weaver by means of a coconut fiber sling (ŏŏwŏk) which passes about the lower back and is attached at either end by means of loops to the cloth beam, which is notched at either end to receive the loops. The weaver can exert tension on the warp by leaning back against the sling, while pushing with the feet against a block or board (fääfä) placed directly beneath the warp beam.

The cloth beam and warp beam are cut and shaped with an axe or adze, usually from breadfruit wood. Lease rod and shed stick usually consist of an unworked length of ivory nut palm frond midrib. The heddle may be any unworked reed or stick. The weaving sword is often made from mangrove wood, flat and pointed at either end, and elleptical in cross-section. The shuttle, made from a long, narrow piece of mangrove wood, has a solid central core about which the weft thread is wound, and is cut out at either end to form projecting guards which are cut through at the extreme ends for the passage of thread. (See fig. 36). The sling, or belt (ŏŏwŏk) is shown in fig. 37.

For weaving more complicated patterns an extra heddle (waicŏ) may be required as well as a pair of auxiliary rods

termed waitip or tip.

Winding the Warp

Before the warp threads (wassan) can be mounted on the loom for weaving, they must be arranged correctly relative to the various parts of the loom. This arrangement could theoretically be done on the loom itself but it is much easier to wind the warp threads on stakes driven into the ground, each stake representing a single loom element, and then transferring the warp to the loom, substituting actual loom elements for the corresponding stakes.

The process of winding the warp is termed enikes, this term also being used in a loose way to refer to the stakes used in the process; the stakes, however, are usually referred to by the name of the corresponding loom element. These stakes, made from mangrove wood, are about 1 ft. 2 in. long and 1 1/4 in. in diameter. They are pointed on one end and are driven into the ground, about 6 in. apart, to form a straight line. Lengths of hibiscus bast fiber, termed esineenap, are tied to the top of each stake and hang down on the ground: during the winding, the warp threads pass over the standing part of these fibers and at the completion of the winding, the bottom ends of the fibers which rest on the ground are brought up and tied fast to the top ends. In this way the relative positions of the warp threads can be maintained while the warp is being transferred from stakes to loom.

Once the loom elements have been inserted through the warp in their proper places, the lengths of fiber are removed and discarded.

For a plain check weave, five stakes are required, corresponding to the five loom elements: warp beam, lease rod, shed stick, heddle, and cloth beam. The stakes are arranged in the same order as the corresponding parts of the loom except that the positions of lease rod and warp beam are reversed, the former having a terminal position in the line of stakes. During the winding, the warp threads are always crossed between lease rod and warp beam and when the warp is mounted, the proper relative positions are again restored by pulling on the cloth beam; in this way the lease rod, with each warp thread making one full turn around it, is brought forward to its proper position in front of the warp beam.

The stakes are arranged in a straight line in front of the worker, the order being, from left to right: lease rod, warp beam, shed stick, heddle, cloth beam (fig. 38). The worker has at her side a hank of undyed hibiscus fiber (if the warp is to consist of black and white warp threads, a hank of dyed hibiscus fiber is necessary). There is in addition a hank of banana fiber thread, made with a two-ply twist, which will be used as heddle, or heald, string. The latter is referred to by the same term (<u>ngyyng</u>) as the heddle itself. The winding is done starting at the bottom of the

stakes and working upward, being careful to see that each turn is placed directly above the previous turn, but not overlapping it.

To commence, one end of the hibiscus fiber hank is tied to the bottom of stake (E), the cloth beam. (See fig. 38). The line passes behind (D) where one end of the heddle string is tied fast to it. The line then continues behind (C), in front of (B) and a half turn about (A). It is brought back, crossing the standing line between (A) and (B), and passes behind (B), (C), (D), and (E). The line is brought a half turn about (E) and the second wind made in the same way except that the line passes in front of (C), the shed stick. The winds continue in this fashion for the entire width of the warp, the line passing alternately before and behind the shed stick. On the first wind, the heddle string is tied fast to the warp, but thereafter it is given a half turn about the warp, first on one side of the stake, then on the other; this is done for every other wind. (See fig. 39).

If both black and white threads are desired in the warp, the line is cut between (D) and (E) and the new line tied to the old, using the knot, puken sinifö. The new line is continued for a number of winds, depending on the pattern desired, and is then cut at the same point and the original color tied on, etc.

For more complicated weaves, additional loom elements,

and thus additional stakes, are needed. Usually, these consist of an additional heddle (waicō), and two auxiliary rods termed waitip or tip. The arrangement of these additional stakes for warp winding is shown in fig. 40.[1]

1. Detailed descriptions, with sketches, of simple and complex warp winds are contained in Kramer (1932: 195 ff.)

Mounting the Warp

After winding, the warp is removed from the stakes and set up on the loom. This is facilitated by the use of lengths of hibiscus bast fiber (esineenap) which serve to keep the warp threads in their relative positions. The stakes are pulled from the ground and the warp lifted up in the hands and transferred to the loom. The warp beam and cloth beam are first inserted through the corresponding transverse loops or openings in the warp, followed by lease rod and shed stick. The heddle is inserted through the loops in the heddle strings. By pulling on the cloth beam, the lease rod is brought forward to its proper position in front of the warp beam. The worker then spreads the warp threads across the length of the loom elements, making sure that there is no overlapping or crossing of warp threads; this is particularly important where these threads pass around the lease rod. She then pulls strongly on the cloth beam,

thus tightening down on all threads and more or less fixing them in place.

Weaving

For most weaving, the weft (ifan) is continuous and of one color; it is loaded on the shuttle (äsäp) which is shot back and forth by hand. For a few complicated weaves, two-color wefts are used in which case two shuttles are required, the weft being broken at required intervals and a new color tied on. In like manner, the weft is usually all of one material, either hibiscus or banana, depending on the quality of the finished product. If two-material weft is required then two shuttles are used.

Weaving with one heddle is a comparatively simple procedure. The heddle is raised with the left hand, thus floating the first shed, and a weft is shot and beaten up with the sword. The heddle is lowered so that the weight of the shed stick produces the counter-shed and a second weft is shot and beaten up. The sword is usually turned vertically when the weft is shot, thus making more easy the passage of the shuttle. (See fig. 41).

Before weaving can commence, two thin strips of ivory nut frond midrib, about 3/4 in. wide, are inserted across the warp by floating a shed. These strips, termed ättyr, help to hold the starting ends of the warp from unravelling and are held in place by wefts which are shot on

either side and between them and which are then beaten up tight against them. A wide strip of hibiscus fiber may serve the same purpose. The weaving proceeds forward from the cloth beam, and the woven fabric is rolled back and underneath by twisting the cloth beam. The completed fabric is removed from the loom by cutting all warp threads, a few inches of which, between the two ends of the fabric, are left unwoven. The two temporary strips (ättyr) are removed and the loose warp threads at either end of the piece are taken three or four at a time and knotted in an overhand knot; these knots are made directly adjacent to the fabric, and the projecting ends are then cut off.

CHEMICAL INDUSTRIES

Paints

Black paint The most commonly used paint of native manufacture (öppwyn) is black in color. The pigment for this paint is obtained by charring hibiscus wood to which is added a lubricant obtained from the inner bark of mangrove. Fresh water is a less desirable substitute. This inner bark is pounded into a sticky mass on which leaves of Hernandia ovigera (jökyrang) are expressed; this is accomplished by wrapping the leaves in a piece of coconut cloth, dipping the bundle in fresh water, and wringing out with the hands. The mangrove bark, thus treated, is in turn expressed on the cross beam press (wycyyc) and the expressed liquid (wong) collected in a wooden bowl. In preparing the paint, a bit of this reddish, slightly sticky, liquid is mixed with the hibiscus wood charcoal which has been pounded fine, and the paint then applied with the flat of the hand, this operation being termed öppwynö. It is considered desirable to add a second coat of pure wong as a preservative and also as a means of adding a certain sheen or lustre to an object. Black paint is used extensively on canoe hulls, wooden bowls and, in connection with ornamentation, as a base upon which are incised various geometric designs.

Red paint A red paint (appar) is obtained by utilizing as a pigment a particular kind of reddish clay found on only a few of the islands, and mixing this with fresh water, in a rough proportion of one part clay to three parts water. This paint is also applied with the flat of the hand, an operation termed appara. It is used extensively in painting wooden bowls, in which case it is necessary to add a thin veneer in order to prevent the pigment rubbing off. This veneer is obtained by grating the fruit of Parinarium glaberrimum (ajis) and mixing the pounded gratings with water. This mixture is then expressed on the cross beam press (wycyyc) and the resulting liquid collected in a wooden bowl. A thin veneer is obtained by repeatedly dipping a coconut palm leaflet midrib into the liquid and tapping it on the painted surface.

White paint A white pigment (pwec), in the form of lime, is obtained by baking a mushroom-type coral (föyrup) in an earth oven. The pigment is mixed with salt water according to some informants, and according to others, young tender coconut palm leaves are chewed and mixed with the baked coral. This paint is not used very extensively, possibly because of the ease with which it rubs off with handling.

Dyes

Yellow turmeric dye The islands of Truk have long constituted

a focal point for the manufacture and trade of yellow turmeric powder, teik. The powder, obtained from the roots of the turmeric plant, Curcuma domestica (äfän), which was formerly extensively cultivated on Truk, constituted an important item of trade with surrounding low coral islands where the nature of the soil precluded the raising of turmeric. The powder was used extensively as a skin cosmetic and for dyeing woven fabrics, although native folklore indicates that at one time the plant was cultivated solely as a source of food starch. (Hall and Pelzer, 1946: 42). With increasing negative sanction on the part of missionaries and the importation of European clothing, the use of teik was gradually discontinued until today Hall and Pelzer (Ibid.: 42) were unable to find anyone engaged in its manufacture.[1]

1. The writer was likewise unable to observe the manufacture of teik, although his Romonum Island informants stated that it is still made today on the island of Moen and traded to Puluwat Islanders who sail to Truk several times annually for the purpose, bringing coconut fiber cord and rope in exchange. The detailed description of teik manufacture presented in this section was obtained largely from informant Kekkin on Romonum Island.

The manufacture of teik involved four separate processes:

(1) grating the turmeric roots (2) straining these gratings with water to obtain a starchy liquid (3) repeated sedimentation of this liquid to obtain a starchy paste (4) baking this paste to obtain a chalky powder. A large number of roots were collected and grated on the grating stool (feiir) to which was attached a flattish piece of coral. The gratings were washed in fresh water and placed in a strainer (cöcön äfän) consisting of a piece of woven hibiscus fibers stretched on a framework of poles at a sufficient height above the ground so that a large wooden bowl could be placed beneath it. Large amounts of fresh water were then poured over the gratings, which were stirred and kneaded with the hands, resulting in the collection of a starchy liquid in the bowl below. A number of bowls were thus filled until the supply of gratings was exhausted after which the bowls were covered over with leaves and the starch (soon äfän) allowed to settle to the bottom. The water was then poured off and the precipitated starch removed with the hands and placed in a number of half coconut shells. Fresh water was added and the starch allowed to precipitate out once again. A small amount of water was then added to the starch in each shell and the total poured into one or two large half-shells. The starch contained in 20 or 30 of the smaller shells filled only 2 or 3 of the larger containers. The repeated sedimentation, with the addition of fresh water each time, is stated to be for the purpose of obtaining a starchy paste free from all

impurities; thus the small coconut shell halves, after the starch had been poured off, contained an impure whitish sediment (jopy) which was eaten in the form of cete taka. Presumably such impurities effected the color and consistancy of the finished product, which was ideally reddish-yellow in color and of a chalky consistancy.

The starch contained in the large shell halves was once again allowed to settle, the water poured off, and a small amount of fresh water carefully added to each container, preparatory to baking the paste in the earth oven. Too much or too little water at this point caused the finished cake to crumble when removed from the oven. The paste was poured into coconut shell molds supported on the hot stones of the oven by banking them with leaf stems of Macaranga (tuup). The whole was covered over with leaves of the upland taro (kä) and allowed to bake for approximately one hour.

After removal from the oven, the molds were allowed to cool and were later taken to the houses where the teik inside was allowed to dry and shrink until it could be removed by holding the mold in one hand, and bringing the wrist of that hand down sharply upon the wrist of the other hand, so that the cake dropped out.

Two types of molds, both of coconut shell, were commonly utilized in making teik. One type, termed sɔ̈pusɔ̈p, consisted of a shell half while the second type (pɔ̈ɔ̈r) was made by splitting a whole shell lengthwise. The two halves

were then bound together, the liquid teik added, and the bottom fissure caulked with preserved breadfruit paste, öpwöt. The cake was removed from this mold simply by undoing the binding. Molds were stored in a netted coconut fiber bag (meear) and were used repeatedly. For trading purposes, the cakes of teik were wrapped in lengths of hibiscus or banana bast fiber. Kramer (1932: 120-21) lists a number of different grades of teik, with terms for each, based on freshness of the product, size of the root, and also, apparently, on the kind of mold used.

Other dyes A method of dyeing fabrics and fibers black which is still in use today, involves soaking the piece in a kind of black ooze or mud (apöcön) found along the edge of mangrove swamps. A mordant, or fixative, is obtained in the form of leaves of Jussiaea suffruticosa (jöwynenipwin) which are often combined with the bark of Sonneratia caseolaris (tarras). To dye a piece black in this manner is japa and to fix the dye, arawa. Leaves and bark of the fixing agents are pounded and placed in a wooden bowl with fresh water where they are squeezed and mixed well with the water, using the hands. The piece to be dyed is placed in this mixture and left over night. On the following day the bowl with its contents is carried to the edge of a mangrove swamp where it is alternately rubbed with black mud (appöcön) and rinsed out in the fixative until the proper color is obtained. The

piece is rinsed out well in fresh water and hung up under cover from the sun until thoroughly dry. As an alternative method, the piece may be buried in black mud for several days after first being treated with a fixative.

A piece of fabric dyed in this way may be given a sheen by roasting two halves of a mature coconut, grating the roasted meat, and rubbing these oily gratings over the surface of the piece. The resulting shiny appearance is characterized by the term mis.

In former times, various items of clothing were dyed by an application of yellow turmeric powder teik. The piece was first prepared by rinsing in a liquid made with a coconut water base into which were expressed young banana shoots. It is stated that this operation helped to retain the yellow coloring of the teik. A bit of the latter was then placed in the palm of the hand and kneaded into a kind of grease by the addition of unscented coconut oil, nöön taka. This greasy mixture was spread on the palm of both hands and rubbed well into the surface of the piece to be dyed.

Perfumes

The Truk islanders make and use a great variety of perfumes, some of which are used exclusively on the body and others of which may also be used on clothing and ceremonial objects. The use of perfumes seems to have played an important role in the aboriginal culture; body perfume and scented

clothing constituted an essential part of such activities as dancing, feasting, love making, etc. The spirit offering receptacle, nän, was rubbed over with perfume and perfumed finery was suspended from it. During Japanese occupation of the islands, the people became accustomed to using perfumes imported and sold by Japanese store keepers and thus today the making of native perfumes has more or less fallen into disuse although most adults are still acquainted with their manufacture.

The basic ingredient of most perfumes is coconut oil, the unscented oil being termed nöön taka. In order to make this oil, the native gathers a large number of coconuts which have fallen to the ground, some of which have commenced to sprout. These nuts are grated and the gratings wrapped in a number of bundles, using leaves of the upland taro (kä) as wrappings. The bundles are in turn placed in a basket which is put in the house with a large wooden bowl turned upside down over it. After two days the gratings are removed and placed in the sun for approximately one half day. They are then expressed on the cross beam press (wycyyc) and the oil collected in a wooden bowl from which it is later transferred to coconut shell flasks, pöör. Approximately two of these pöör containers full of oil can be obtained from thirty to forty nuts. Coconut oil prepared in this manner is used extensively in dressing the hair and, in former times, was used as a lubricating agent in the application of turmeric

powder (teik) to the body and to fabrics.

Coconut oil is also obtained by a process of boiling expressed coconut cream, a method which Romonum informants state is comparatively recent, having been developed with the introduction of the iron cooking pot. They specifically deny that oil was ever obtained in this manner by stone boiling or boiling in shell containers. As done today, the cream is boiled for approximately one half hour, stirring constantly, until a crystallization of small reddish pellets takes place, after which the oil is strained off through a piece of cloth material or coconut cloth. Oil obtained by this process is termed nöppuk, and is used extensively as a hair dressing.

Unperfumed coconut oil, obtained by pressing or boiling, is commonly scented by the addition of sweet-smelling herbs, leaves, and flowers. The oil obtained by the pressing method, termed nöön taka, is collected in a wooden bowl, covered over with a large taro leaf, and placed in the house. During the ensuing few days various herbs, flowers, etc., are collected, crushed and pounded, and added to the oil base. Dried and crushed fish heads are also considered a desirable scenting agent although only certain varieties of fish are used for this purpose: tykyfan (possibly angel fish), nipwoopwo (possibly puffer fish), and mwarefat (possibly surgeon fish) were mentioned by Romonum informants. The scented oil, termed nököföy, is later separated from these ingredients by straining and is kept in coconut shell flasks

(pöör) fitted with hibiscus wood stoppers. Coconut oil obtained by the boiling method, termed nöppuk, is also scented by the addition of crushed herbs, flowers, etc., after which the mixture is boiled again and the scented oil separated by straining. This oil is used today on the hair and body by both sexes.

A popular perfume (nöön jömön, nöön ajis) is made from the fruit of Parinarium glaberrimum (ajis). The fruits are split open and the meat removed by grating on the coconut grater (pweiker), the gratings then being mixed with some or all of the following: pounded leaves of Polypodium scolopendria (ciici), pounded bark of an unidentified plant (jejirenges), pounded fruit of sööjör (possibly genus Plumiera), pounded leaves of an unidentified plant (meekic), pounded roots of the wild orange (gurugur), pounded leaves of a variety of turmeric (kycyn), and grated coconut meat (taka). To this mixture is added enough fresh water to make the whole a spongy mass which is mixed thoroughly with the hands. The ingredients are then packaged by wrapping in leaves of the upland taro (enippo) and leaves of Morinda citrifolia (nopwur), the wrapping being accomplished in the same way as for preserved breadfruit preparatory to cooking. Ten to twenty of these packages are placed in the dry heat of the earth oven for approximately three quarters of an hour after which they are removed individually, the contents wrapped in coconut cloth, and expressed on the cross beam press (wycyyc).

A large upland taro leaf is fitted into a hole made in the ground directly beneath the press and the expressed liquid is collected in this leaf. When filled, the leaf is lifted from the hole, gathering in the edges of the leaf so that none of the contents spills out, and a small puncture made in the bottom of the leaf so that the thin liquid drains out on the ground, leaving a rather thick precipitate (soonen ajis) clinging to the inside of the leaf. The soonen ajis is kept in a coconut shell flask (pöör) similar to that used for storing liquids of all kinds.[2] In this case, however,

2. These containers have been replaced today by glass bottles and jars.

the flask is fitted with a stopper (pineppin) of hibiscus wood and a special wrapping is added in order to prevent the essence of the perfume from escaping. Both the container and the stopper are wrapped around well with a piece of woven hibiscus fiber which is in turn held in place by coconut fiber netting (föösum). A wooden cross piece is lashed to the summit of the stopper and serves to hang the flask in the house by fitting the cross piece between two rafters. Kramer (1932: 115, fig. 86a) gives a sketch of this arrangement in which the wrapping covers only the body of the flask. In its original thick and somewhat sticky condition, the soonen ajis is used only on necklaces and headbands of leaves and flowers. It may be thinned for use on the hair and body

by adding perfumed coconut oil (nököföy) or by adding a mixture of grated and expressed Parinarium and coconut meat.

An additional method of using perfume, practiced in former times, consisted in slitting the body of a dried fish lengthwise and filling it with sweet smelling herbs and various kinds of perfumes. Scented coconut oil (nököföy) was rubbed on the outside of the body and turmeric powder (teik) was applied to the region around the eyes. The body was then bound up with leaves of a variety of turmeric (kycyn) and a number of these leaves were passed through the gill slits and braided into a line so that the fish could be suspended about the neck of the wearer.

A similar arrangement entailed the use of the fragrant fruit of a species of genus Calophyllum (wängy), which was hollowed out, filled with perfumed herbs and flowers, and suspended about the neck by hibiscus fiber cords passed through holes drilled in the fruit.

Cements

The Trukese use a cement-like caulking compound (ämät) containing a lime base. The lime (pwec) is obtained by calcining a mushroom type coral (föyrup) in an earth oven, leaving the lump lime in situ where it is gradually air-slaked. When needed, the lime is taken out and pounded. Coconut spaeth ashes (eppinget) are added to the lime as it is being pounded. The product is used in caulking canoes and in

attaching sting ray barbs, mäcey, to the shaft of the spear, niauppwec.

AGRICULTURE

Cultivated Crops

Under this heading are listed the main crops in order of their importance as a source of food under present day conditions. Some of the items well down on the list at present, as arrowroot, yam, and turmeric,[1] were apparently more important in former times, while introduced foods as cassava, sweet potato, and sugar cane have attained to their present importance comparatively recently. Hall and Pelzer (1946: 35) comment on the fact that coconuts were of considerably less importance before the Germans began the systematic encouragement of coconut palm cultivation.

1. The importance of turmeric was actually due more to its function as the source of a yellowish-red powder used as a cosmetic than to its value as a source of food.

Breadfruit Breadfruit, the generic term for which is mai, is by all odds the chief source of food on Truk. The fresh fruit is available in varying quantities for at least six months of the year, and in a preserved state at all times. A large vocabulary has grown up about the cultivation and preparation of this important food. Elbert (1947: 241) has collected the names of a large number of varieties recognized by the Trukese. Informants on Romonum stated that the varieties meicön, öfa, meiror, faiör, and meiter are the most plentiful and most important on that island. The different varieties can be recognized

usually by the shape of the leaf and often by the appearance of the fruit.

The more prolific varieties of breadfruit, meicön and öfa, bear from May through August, and this period is thus thought of as the main breadfruit season, usually referred to in the literature as räs or neeräs.[2] Lesser varieties

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2. According to Romonum informants, the term räs is actually applicable as long as the fruit is in some stage of development, either flower or fruit. Thus the male flower and dry pod (aföfö) appear during January and February; the small fruits (sajwit) in March; from March through April the fruit is getting larger (petimaw) and the stem becomes red (niaacynup). From May through August the fruit is mature (aanö) and can be picked. The period of this mature stage is spoken of as mein ynymar. The entire period from January through August is thus theoretically termed räs, although this term in practice most often refers to the bearing period from May through August.

This information was obtained from only a few informants and should be checked, since it seems to disagree with much of the literature on the subject.

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bear intermittently in October and December. The period when fresh breadfruit is unobtainable, lasting mainly from January through April, is termed mein efen.

Taro There appears to be no generic term for taro, but rather giant taro, upland taro, etc., are each distinguished by a separate term. The four main varieties of taro (with identifications taken from Hall and Pelzer, 1946: 40), and all belonging to the family Araceae, are: upland taro or kä (Alocasia macrorrhiza) and a related variety etippo or munu (Alocasia sp.); taro or ôni (Colocasia esculenta), and giant taro or puna (Cyrtosperma chamissonis). In addition the Trukese recognize sub-varieties of at least one of these four main types, ôni, for which Hall and Pelzer (1946: 41) list nine such sub-classes.

Coconut A great many varieties of coconut (ny) are recognized by the Trukese, apparently by the appearance of the nut. Those mentioned by Romonum informants are: nyjarau (greenish nuts), nymay (slightly reddish nuts), nyca (slightly reddish nuts), nysessen (large number of nuts on one tree), nynpöör (large nuts, for drinking. Shell used for flasks).

The stages in the growth of the nut are: kiirup (small, size of ball), taap (slightly larger), soojy (beginning formation of meat), näuupyt (meat hardening), taka manay (mature nut), taka pwas (fallen to ground. Dry, with milk inside), ôt (nut beginning to sprout. Spongy mass forming inside), côôfar (sprout a foot or so high), ficenipwe (sprout about four feet high. Leaves and a little cloth at base).

Cassava (Manihot esculenta), termed maniôc, was introduced by the Japanese and attained to particular importance during the war. It is still planted extensively although it is not particularly liked as a food.

Sugar cane (wo) is an introduced crop that has become very popular with young and old. It is the chief source of food when working in the bush and is chewed intermittently throughout the day, much as some Americans chew gum.

Banana The generic term for banana is uuc, although a great many varieties are recognized, some being considered particularly good for certain purposes, as cooking, weaving, etc. Romonum informants rate the variety sämoa as the most plentiful; uucyn pôneppe, peresin or uuc Ömerika, and ämesepyyk as the most tasty; for cooking purposes ämesepyyk and uucupwec are best followed by appaap, uuciirek and fôrôcôn; for weaving purposes, uucuaja and appaap are considered best.

Sweet potato The sweet potato (komy) is stated by Hall and Pelzer (1947: 42) to be a Japanese introduction, although informant Kekkin on Romonum stated that what he called komy cuuk (Trukese sweet potato) is much older, while the Japanese introduction he referred to as satymaimô (possibly from Japanese satoimo, meaning a kind of taro). However the case may be, sweet potatoes are today being planted extensively.

Papaya Papaya (kippway) is planted rather extensively and is eaten mostly while working in the bush.

Pineapple The pineapple (painaper) is found on all the islands, its cultivation having been encouraged by the Japanese.

Soursop, wild orange, mango and watermelon These fruits, termed sasaf, gurugur, mangko, and sennia respectively, are eaten occasionally, but do not constitute a regular part of the diet

Pandanus Pandanus, (fac) is occasionally planted along the shore, but its propagation is left largely to nature.

Turmeric Turmeric (Curcuma domestica) is called ǽfǽn. Hall and Pelzer (1947: 42) cite Trukese folklore to the effect that turmeric was cultivated for its starch until a god taught the Trukese the preparation of teik, a yellow cosmetic. It is cultivated rarely if at all today although once its cultivation furnished a major item of trade in the form of teik.

Tobacco Native tobacco (suupwa cuuk) is still grown on Truk although foreign-made cigarettes have greatly reduced the extent of its cultivation. Formerly, most men maintained a

small tobacco patch near the dwelling, usually fenced in to prevent someone stealing seeds and cuttings as well as the crop itself. The fence, about 6 ft. high, was made by forcing criss-crossed sticks into the ground close to one another and surrounding the whole with palm fronds.

Arrowroot Arrowroot (Tacca pinnatifida) is termed mŏkymŏk. Although this plant seems never to have been cultivated on Truk, at one time it constituted a fairly important item of the diet. It has been at least partially replaced by Cassava, introduced by the Japanese.

Yam The yam (eep) grows wild today and is used only as a famine food. According to informant Kekkin on Romonum, this plant was cultivated formerly.

Areas under Cultivation

Crops either of economic or nutritional value are cultivated on most of the natural areas characteristic of the high islands within the lagoon. Coconut palms and banana trees, as well as some breadfruit and pineapple, are found in abundance on sandy coastal areas. Pandanus is planted to some extent along the shore. Non-saline swamps occur on many of the islands in a belt between the coastal area and the interior uplands and giant swamp taro is planted in most of these swamps although the Japanese drained many of them in

order to plant the faster-maturing sweet potato. A smaller variety of taro, Colocasia esculenta, is found in many cases along the edges of these swamps. The ivory nut palm (rypyung) grows also at the edge of non-saline swamps but these trees are usually left to seed themselves and are seldom intentionally cultivated. On hillsides and uplands occur large stands of coconut and breadfruit trees, either mixed or separate. On these areas also are found patches of cassava, sugar cane, pineapple, sweet potato, banana, and two varieties of taro -- the upland taro, Alocasia macrorrhiza (kä) and the smaller variety, Colocasia esculenta (ồni). These latter crops are seldom found mixed with coconut and breadfruit since they would be crowded out by the taller trees. In former times turmeric was planted in well-drained areas on hillsides and uplands.

The coastal area, composed of sand (pi) and finely-ground shell and coral, is referred to as ồroset wồn pieppi. This soil is considered good for coconut palms and bananas. The soil of the non-saline taro swamps is termed turuppwöön or pwöön, while that of saline mangrove swamps is referred to as pồkkak or mönồk. The latter is of course unfit for growing any of the cultivated crops. A darkish humid soil found inland, often on hillsides, and termed pwyneccồn, is considered very good for raising most crops. Equally good is a reddish, friable soil (pwyneccuuk) found in great abundance on upland areas.

All of these areas are divided into named tracts of land (averaging slightly over one acre on Romonum) owned in fee simple by lineages. The tracts belonging to a lineage are sometimes contiguous but by no means is this always the case. The tracts are in turn divided into plots (averaging three to a tract on Romonum) which are assigned to adult lineage males who hold such plots in usufruct, i.e., with ownership and right to the products of only those trees planted by an individual at present holding the usufruct title or those trees planted by the person from whom he acquired the usufruct title. This usufruct title does not thus involve any ownership of the land itself, which is held in fee simple by the lineage. These plots of land are usually worked by a group of lineage males who form a line, or tetten, on a generation level, the eldest having in theory the actual right of usufruct to the plot and more or less directing the work of the others.[3] Today, women do a

3. A summary of Trukese social organization, including land tenure, can be found in Murdock and Goodenough (1947: 331); for a detailed treatment of the subject see Goodenough (Mss.).

certain amount of lighter agricultural work, as weeding, helping to gather breadfruit and other crops, etc. The heavier work is done by men, however, and it appears likely that the role of women in agricultural work was even more restricted formerly than at present.

Agricultural Techniques

Clearing land Land intended for cultivation is not completely cleared of all trees, shrubs and grass as is the custom in Western countries. The actual extent to which clearing is done depends on the crop and on the nature of the land itself, steep hillsides practically never being cleared due perhaps to a fear of erosion. The more usual method, used for bananas, dry-land taro and Colocasia esculenta, is to clear out most of the larger trees and undergrowth, after which holes are made at random among the remaining stumps, grass, etc., one for each plant. This pattern has been modified somewhat for introduced plants such as sugar cane, sweet potato, and cassava, which are found in fairly large, well-cleared areas (tennippi), although this latter pattern is largely a result of the intensified cultivation of these crops furthered by the Japanese during the war. Non-saline swampy areas are cleared fairly completely before being planted to giant taro. Coconut and breadfruit trees are planted more or less at random, with no extensive clearing of land beforehand; only immediately adjacent shrubs and trees are cut away. In former times, only land planted to turmeric was cleared to any extent. Such plots of land, termed mān, were completely cleared, according to Romonum informants, leaving only the larger stumps. The land thus cleared was then thoroughly worked over with digging sticks. Such extensive preparation seems to constitute a unique exception to what was apparently

the general pattern in former times.

Land is cleared by two methods. One method, termed ɔttɔt, involves cutting out brush and high grass, for which a stick of wild orange wood (gurugur) was used in the old days. It was grasped in both hands and wielded with back and forth strokes (ätter) somewhat like a sword. European contact introduced [redacted] knives, and axes, which are used everywhere today. The other method, termed keek, involved burning off a piece of ground, and according to informants on Romonum, has not been used since German times. The burning was usually done during the period from December to February when there is less rain and flora is comparatively dry. Planting was then begun a few weeks after the burning.

Field rotation In some cases, when a particular crop has been harvested, that piece of land is not used again immediately, but is allowed to grow up again for a year or year and a half, and can then be used again if so desired. The degree to which land is left fallow seems to be quite variable. Land planted to upland taro should be left fallow once the crop has been harvested; thus the shoots (inin) are taken out and transplanted (eiini) to a new piece of ground. Land planted to tobacco is likewise not used over again. At the other extreme, banana shoots are usually left to grow up each time in the same place. Humid or swampy soil, such as that used for Colocasia and swamp taro, is used over and

over again, leaving new shoots to grow up into mature plants.

According to native theory, as gathered from conversations with informants on Romonum, all crops take moisture from the soil but certain crops, as the taros, tobacco, and sugar cane, require more moisture in the soil than do others, as sweet potato, banana, coconut, and breadfruit. Among the former, swamp taro and Colocasia planted near swamps do not require field rotation due to the excessive humidity of the soil, while upland taro, Colocasia, planted on uplands, and sugar cane do necessitate field rotation since the soil on these upland areas becomes rapidly depleted of its moisture. This moisture-depleted condition is referred to as mɔ̀ɔ̀suɔ̀. The latter group -- sweet potato, banana, coconut, and breadfruit -- may be grown year after year in the same spot since there is considered to be little or no moisture depletion in these cases.

Planting methods Once the land is cleared, planting is done with the digging stick, wɔ̀t. Holes for planting are made with the digging stick and the ground immediately surrounding the plant is turned over. Extensive turning, or working, of the earth was done only in connection with planting turmeric.

Most crops are propagated by removing shoots from the parent plant. Breadfruit is propagated by cutting a shoot (pukuttä) from the parent root. The shoot should be two or

more feet high with some leaves. The root is cut on either side of the shoot such that a length of root about 2 ft. long is left attached to the shoot. The shoot is then planted with a few inches of its stem under ground. A mulch of dead leaves is put around the bottom of the stem. At the time of planting, the top section of the stem containing the leaves is removed, and this cut end is then wrapped with a few breadfruit leaves which are tied in place. The wrapping is left in place until it rots off. Informants stated that only one variety of breadfruit (ôneas) is propagated by means of seeds.

Swamp taro is also propagated by means of a shoot (inin). The shoot should be at least 1 1/2 ft. high since, it is stated, a smaller one will die in the transplanting process. Upland taro is propagated in the same way as is the smaller variety of taro, Colocasia esculenta (ôni). The latter may be planted at random either at the edges of non-saline swamps or on moist upland soil; in either case, an area planted in this fashion to Colocasia esculenta is termed fattôsôn. Colocasia is occasionally planted in a more formal pattern, in which case the planted area is referred to as nöök, and the method as nöökyn ôni. By this method a narrow strip of land, preferably near a non-saline swamp, is cleared completely and the weeds, grass, leaves, etc., are then laid in the form of a thick mat over the entire area and left to settle. Shoots are then planted in longitudinal rows on

this prepared area. On Romonum these areas, three in number, average 200 yds. in length by 25 ft. in width.

A banana tree which has borne fruit is cut down and new shoots are left to grow up and take its place. The shoots, inin, can be transplanted if desired by cutting and prying up with a digging stick.

Coconuts are propogated by planting a nut which has fallen to the ground, preferably one which still has some milk inside. A shallow hole is scratched out with a digging stick, the nut placed in the hole, and partially covered with dirt. After the nut has taken root and produced a shoot one foot or more in height, the latter may be transplanted if desired.

Tobacco is propagated by means of seeds (föyen suupwa). Seed pods are removed from a plant, allowed to dry, and are then broken open in the hand and the seeds scattered on a piece of prepared ground. The resulting plants are later thinned out by transplanting. A particularly strong variety of tobacco called paakken can be propogated by planting cuttings taken from the stem.

Once the plants have taken root the Trukese farmer returns periodically to pull out weeds, grass, etc., around the plants and to keep down any brush in the planted area. This subsequent weeding is referred to as etimwör. The degree to which the ground is kept clean seems to vary with the kind of plant being cultivated. For taro and bananas it is enough

to keep down the higher grass, etc. The land around sweet potatoes, cassava and sugar cane is kept somewhat more free of weeds and brush. For coconut and breadfruit, trees and brush are kept cleared away from the immediate vicinity of the growing tree until it is large enough to shift for itself.

Different crops are usually planted on one plot of land, but it is not the usual practice to mix them together. Sweet potatoes and taro are seldom planted side by side, for example, since the smaller plant would be crowded out in time. A crowded condition such as this is referred to as maace. Breadfruit trees are in general kept out of areas planted to taro, banana, sweet potato and other low-growing plants. Coconut trees, because of their height and comparatively scant foliage, are in general allowed to grow anywhere.

When planting a crop of which there are many varieties with various uses, as bananas, an attempt is made to get as many different varieties as possible. This can be done by taking shoots of the desired variety from someone else's land -- a practice which is condoned providing one first obtains the permission of the owner.

HUNTING

Introduction

Hunting was restricted largely to fowling and the catching of land crabs. Pigs were speared but these appear to have been domesticated animals which were allowed to run loose. There is no indication of snares or other methods for catching rats. Fowling is practiced very little at the present time, but methods employed to take land crabs can still be observed.

Bird Traps

Three types of traps were described by Romonum informants, all involving bait and a slip knot arrangement to ensnare the legs or neck of the bird as it attempts to take the bait. One type of trap, termed eseiic, and used for wild birds, involved placing an empty coconut shell half on the sand, placing an open slip knot across the mouth, and covering over loosely with leaves. A bit of fish was used as bait and the bird, attempting to reach in to get the bait, pulled against the knot which then tightened around its neck. (See fig. 42).

A second trap, similar to the first, and also termed eseiic, involved the use of an old fish basket (kumar) with a slip knot placed at the opening to the basket (fig. 43).

A third type of trap, termed nikappic, was used for wild fowl. This trap worked on a tension, or spring, principle, the noose being attached to a long pole or sapling under tension so that when released by a trigger arrangement, the pole snapped back thus pulling the noose tight around the legs of the bird. (See fig. 44).

A bird termed ekkiek (given by Elbert as white tern) was often caught by ensnaring its wings in a bit of bread-fruit sap (appac) placed on the end of a long pole. This procedure is referred to as tikkin mösyysy.

Crab Snares

Land crabs (nippwei) are taken by means of a snare on the end of a long pole. The pole may be up to 12 ft. long and at one end is lashed a short length of coconut leaflet rib. This rib projects about 1 ft., and a length of hibiscus fiber line is attached to the end of the rib. In the end of the line is a slip knot. The technique is to get the noose around some part of the crab's body, whereupon the pole is given a quick jerk and the crab hauled in.

By another, somewhat similar method, a small bundle of leaves is attached by a string to the end of a long pole. The bundle of leaves, stated to be arrowroot (mwökömwök), is pulled along in front of a crab, who will grab at it. The bundle is pulled gently until the crab is lifted from the ground, and is then hauled in.

Domesticated Animals

At the present time the Trukese keep chickens (cukó), pigs (pik), dogs (konak), and cats (kattu), in fairly large numbers. A few cattle (kou) are also in evidence. These animals are all used for food with the possible exception of the cat.

Finsch (1893: 564) states that Lütke, who visited the island of Lukunor in the early part of the 19th century, found dogs and cats already on that island, and also quotes Kubary to the effect that these animals were known on Truk in the days before white contact. He concludes that the early contact of the Truk and Mortlock groups with the Marianas probably resulted in the importation of these animals from the latter islands.

It is difficult to ascertain the time at which the pig and chicken were introduced on Truk. The native term for the former, obviously borrowed from English, at least indicates a relatively recent introduction of that animal. Cock fighting was, and still is, practiced on Truk and informants stated that formerly fighting cocks were kept in individual coops, tior. The chicken is used also occasionally for food but seems to have no other function in native culture. Pigs were formerly allowed to roam at will, each owner recognizing his animals by the markings on the body. The pig seems to have no importance in the culture other than as a source of food.

Fruit bats (pöyte) are occasionally regarded as pets and are given individual names. They are fed regularly and return periodically to the owner.

FISHING

Introduction

The fishing activities of women were confined largely to the relatively shallow area between island and fringing reef. This area, termed neefat, is an ideal spawning ground and the small fish found here were taken by women by a variety of methods, chief among which were those involving the use of paired hand nets. The activities of men took them farther offshore, usually in canoes, and they ranged as far as the barrier reef for extended expeditions. Trolling methods were carried out by men in the deep water within the lagoon and also in passes in the barrier reef and in open sea outside. But man also operated on the neefat area for certain kinds of net and trap fishing.

It would seem that this sex difference in the range of fishing activities was more marked formerly than at the present time. The introduction of new methods due to prolonged contact with Europeans and Asiatics has led to modifications of what was apparently the old pattern. Thus the various techniques made possible by the introduction of the metal spear and underwater goggles are today pursued by both sexes, either inshore or offshore. In like manner the recent acquisition of large seine nets and Japanese diesel-powered fishing boats has resulted in women occasionally accompanying men to the barrier reef. These introduced

techniques seem also to have supplanted to a large extent many of the older, traditional methods; stone fish weirs, although present on most of the islands, are rarely used, and the manufacture and use of basketry traps seems to be rapidly disappearing. Women's paired handnets are still manufactured and used extensively on all the islands, but the larger types of men's nets are becoming rare.

Sticks

A stick of mangrove wood was used in former times to catch the fish ikefey and uusop, both unidentified. This method, termed tuufey, was practiced at night by several men and women, the men equipped with mangrove sticks, and the women with paired hand nets. A party thus equipped went out to the fringing reef where large areas of branch coral (acefeenget) are found. The women surrounded a small patch of the coral with their nets, whereupon the men poked and pounded the coral with the mangrove sticks. The fish, sleeping among the coral, darted outward and upward into the nets. This method is still used occasionally, although metal spears have taken the place of the wooden sticks.

Octopus stick Women can often be seen hunting small octopus (nippac) in the shallow waters offshore, by a method termed kaawen nippac. The octopus are hunted by means of a stick (ŏruwŏr) made from á small-diameter limb of Hernandia ovigera

(jökyrang). This stick, approximately 3 ft. long and 1/4 in. in diameter, is curved slightly at one end by heating over a fire. After bending, the bark is removed from the bent end. The woman walks about in the shallow water looking for a hole on the bottom covered over loosely with small stones; these are removed with the stick, the bent end of which is then thrust down in the hole and moved about. The octopus, if present, grasps the stick and is hauled out, whereupon the fisherman bites the animal between the eyes in order to kill it. According to informant Kekkin on Romonum Island, ashes (niifanang) are introduced into the hole in case the octopus refuses to be pulled out. Today, the iron fishing spear is often used instead of the stick, öruwör.

Groping

Groping for fish with a short mangrove stick is termed meseföng. Romonum Island informants stated that this method was used before the Trukese acquired the use of underwater goggles. The same informants stated that the stick was used to avoid lacerating the hand on the sharp spines found on some species of fish, an event likely to occur in blind groping with the bare hand. The fisherman waded about the shallow flats inside the fringing reef looking for stones or coral growths likely to shelter a fish. He then very gently inserted the stick in and about a coral or stone until he contacted a fish. An experienced fisherman could

tell the position of the fish by the nature of this contact, and with this knowledge could then proceed safely to reach in and grasp the fish.

Narcotizing

Derris trifoliate (wyyp or wypenipot) is used to narcotize smaller fish, as angel fish (cykyfan, Elbert), bass (wör, Elbert), and the unidentified fish maramwen and nittikittik. The entire plant is pounded fine and wrapped in a coconut cloth bundle; the liquid content within the pounded plant is expressed in shallow water about pieces of branch coral. The fish feeding about this coral are narcotized and float to the surface where they are picked up and put in the fish basket, kumar.

Rock Heaps

Rock heaps are utilized in connection with a method of fishing, still used occasionally, termed pynypyn. By this method women erect a pile or heap of small-diameter rocks (etinuk) on the shallow flats (neefat) within the fringing reef. The heap is left undisturbed for a month or so until a kind of lichen (nuum: seaweed, scum, coating) begins to grow on the stones. This lichen is eaten by angel fish (cykyfan, Elbert) and bass (wör, Elbert) and thus serves to attract these fish to remain in and about the rock heap. After a sufficient lapse of time, several women repair to the

heap; a large satchel-like basket (tengerik) is placed with its open end facing one end of the heap. The women then surround the heap on the other three sides, and by a process of gradual dismantlement of the heap, force the fish therein to escape into the basket. By an alternative method, a tengerik basket is placed at either end of the heap, the removal of the stones then forcing the fish to flee in two directions.

Bow and Arrow

The bow and arrow (nikappic: from pic: snap, vibrate, Elbert) was used in former times for taking small fish in the shallow waters offshore (neefat). Romonum informants indicated that the use of the bow and arrow was confined mostly to boys, who used it also for shooting small birds, lizards, chickens, etc. The fisherman waded about in the shallow water and released the arrow from above the water.

As described by informants on Romonum, the bow (pacan) was made by heating and bending a mangrove wood stick about 9 in. long. Kramer (1932: 141) by referring to the bow as gurugur indicates that it may also be fashioned from wild orange wood. The bow was strung with a hibiscus fiber line fööfön nee nikippic and was used in conjunction with an arrow (wassan) about 3 ft. long made from mangrove wood and sharpened at one end. In use, the bow was held in a horizontal position, much as a cross bow; according to

Kramer (Ibid: 141) a slight groove was cut across the upper surface of the bow, through which ran the arrow.

Coconut Leaf Sweeps

Sweeps made by attaching coconut palm leaflets to a long length of vine were used within the fringing reef to drive fish into stone weirs where they were speared or netted. The vine used for this purpose, Derris trifoliate (wypenipot), was fashioned into a rope 150 or more feet in length and the individual leaflets in turn attached at intervals to this rope. The term for the completed sweep (roop) would appear to be of foreign origin, although informants were unable to supply an alternative term.

The coconut leaf sweep was used in conjunction with a fishing method termed pöö, whereby sixty to eighty men participated in driving fish from a point just inside the fringing reef to one of the permanent stone weirs located along the shore; once inside the weir, the fish were speared. The sweep was paid out from a canoe, and arranged in a semi-circle facing the shore. Men stationed behind the sweep helped to push it along in the direction of the weir; others, stationed along the way, prevented the fish from escaping on either side by throwing stones and beating the water with spears. The leaflets hanging down in the water served to keep the fish within the area encompased by the curve of the sweep.

A second method (roopen ukööuku) involved the con-

struction of a temporary stone weir on the fringing reef. The coconut leaf sweep (roop) was then used to drive an unidentified fish (ukööuku) into this weir where they were speared. To accomplish this, a few canoe loads of men customarily paddled out just beyond the fringing reef, during high tide. The sweep was then paid out and arranged over the reef area in a semi-circle facing the island. The ukööuku fish, which frequent the area just within the reef (on the island side of the reef) were then driven by shouting, beating the water with spears, and throwing of stones, within the area of the curved sweep. Meanwhile, a temporary weir of coral and stone was constructed nearby on the reef, and the contents of the sweep transferred within this weir.

Torches

Dried coconut leaf torches (töön) are still used extensively for various kinds of night fishing. The torches are usually prepared during the day in preparation for fishing during the ensuing evening. A number of dry, dead coconut palm fronds are gathered -- the number varies according to the amount of time to be spent in night fishing; an average expedition, involving three men and lasting from 8:00 P.M. to about 12:00 P.M., requires approximately twenty torches. Each frond is cut about 3 ft. in from the butt end and the smaller end, averaging 4 ft. long, is then used to form the foundation of the torch. This foundation is placed on the

ground, tip end facing away from the worker. Three or four leaflets are removed from both sides of the base end of this piece and placed on the midrib, parallel with it. A dozen or more leaflets are then stripped from the original butt end of the frond and are added to those leaflets already laid along the midrib of the foundation piece. A few of these additional leaflets are wrapped around all those leaflets which lie parallel with the midrib so that the result is a long bundle of leaflets lying on the midrib of the outspread foundation piece. A few additional leaflets are then used to enfold the foundation piece about this bundle of leaflets, thus forming a bundle within a bundle. The leaflets of the foundation piece are bent in against the inside bundle of leaflets and are then held tightly in this position by a series of five leaflet wrappings, spaced equidistantly along the length of the piece. These wrappings are secured by tucking the working end a few turns underneath the standing part. The tip-end leaflets are bent back and held in place by one of the five leaflet wrappings. The result is a compact bundle about 5 in. in diameter and 4 ft. long, with a handle made by stripping away a few of the leaflets at the base end of the foundation piece.

Coconut leaf torches are used primarily in conjunction with spear fishing. By an old method (<u>etik</u>), no longer used, fish were hunted along the inside side of the fringing reef, using the mangrove wood spear, <u>eppikirup</u>. The torch was held

by one man, either sitting in a canoe or standing on the reef, while one or more men handled the spears.

This method has been replaced by one termed annttiosen neepwin, in which underwater goggles (annttios) and an iron spear (meca) are used.[1] This method is in widespread use at

1. The term annttios (from the Spanish, anteojo, goggles, spectacles) indicates that the techniques of manufacture and use of this artifact may have diffused to Truk from the Marianas. At present, goggles are fashioned by the Trukese using pieces of window glass set in hibiscus wood frames, with a head band cut from a length of rubber innertube.

the present time; it is done by parties of men, occasionally accompanied by women, on calm, moonless nights, when the fringing reefs of the islands are dotted with their torches. A canoe, laden with torches, transports the party to the inside side of the fringing reef where it is kept in position by one member of the party who either sits in the canoe, paddling occasionally, or else stands on the reef holding the canoe in position. This individual also holds the burning torch high in the air. The other members of the party, two or three in number, walk and swim about under water looking for fish sleeping among the branch coral. When a fish is spotted, the fisherman lines up his spear underwater, usually by resting it on an adjacent piece of coral for better aim,

and propells it forward with a thrusting movement of the right arm. By an alternative method, an individual may walk about with torch in one hand and spear in the other, meanwhile peering down into the water through the goggles; this method entails spearing the fish from an upright position, however, and is less successful. Fish up to 1 ft. or more in length, as angel fish and bass, are taken by this method.

Another popular fishing method, involving the use of the coconut leaf torch, is that termed takkic, in which fish are speared from a moving canoe, using a multi-pronged spear. This method is described below under "spears."

Catching Turtles by Hand

Sea turtles (wiin or pwäpwä) make periodic visits to uninhabited coral islets for the purpose of laying their eggs in the sand. Romonum Island informants stated that such visits are made each month during the period of the new moon (neeningetän maram). On Romonum, three or four men regularly visit a small islet, Fenesiic, off the western end of Romonum, where they look for turtle tracks in the sand. If these are found, the men prepare to camp in the center of the islet for a period up to one week in duration. During this period they move about freely during the day, but at night they take turns standing watch, since the turtles come during the night. When a turtle is observed on the beach, the watcher wakes his sleeping companions;

the men rush out, quickly flip the animal over on its back, thus rendering it helpless. The turtle is killed by first cutting a hole in the outer flesh, at a point between one of the rear flippers and the vertral shell; one of the men then removes the entrails through this hole. The animal is lashed to carrying poles and taken to Romonum where it is baked. Informants stated that never more than one turtle is taken at one time. This method of catching turtles is termed oopewiin, to hide from turtles.

Informants described an interesting method of divination in connection with oopewiin, whereby the arrival of turtles may be predicted. If the men are lucky enough to find turtle tracks in the sand, on one of their periodic visits to Fenesiic, they immediately look for eggs buried in the sand. If present, these are counted and knots are tied in a length of palm leaflet according to the last digit in the total number of eggs; if the eggs total 145, then 5 knots are tied. Each day thereafter, one knot is removed until the fifth day, corresponding to the fifth knot, arrives; this is the day on which the turtles will come. The knots are tied according to a method termed pwe.

Another method of catching sea turtles, more or less accidental, was observed while on Romonum Island. A turtle happened to come to the surface for air in the immediate

vicinity of a canoe load of men. The latter immediately struck the water vigorously with their paddles, thus frightening the turtle so that it went under again without having obtained sufficient oxygen. As a result the turtle remained in a groggy state and was easily captured by one or two of the men. The animal was then towed ashore. There is apparently no term for this method of taking turtles.

Spears

Single-point spears In pre-contact times the ordinary spear (eppikirup) was fashioned from a straight piece of mangrove wood, pointed at one end and barbless. The wood for this spear was obtained by searching the coastal mangrove swamps for long straight aerial prop roots. These roots, when they reach an average diameter of 3/4 in., are sufficiently sturdy to serve as fish spears. The roots were cut to an average length of 5 ft., the bark removed by scraping with a small shell, and one end shaped in a long, tapering point with the straight-edged shell adze, tikköttik. Any bends in the piece were removed by heating over a fire and straightening with the hands.

These mangrove spears have been virtually completely replaced by iron spears, apparently obtained early in the contact period. The term for metal spears is meca (Elbert gives the origin of this term as English, metal, iron). The spears in use today are fashioned from long iron rods,

apparently imported by the Japanese, using cold chisel and file; they are usually made with a single point and without a barb.

The metal spear (meca) -- in former times the eppikirup spear -- is used occasionally in conjunction with a fishing method termed ŏŏppunes, in which as many as twenty to thirty men may be involved. The men go out in paddling canoes, either to the fringing reef or to the barrier reef; if the former, the expedition lasts for one day only, but if the latter, the men may stay for two days or more, sleeping on one of the many uninhabited islets located on the barrier reef. The party forms a large circle on the reef area, whereupon each man beats the water vigorously with his spear. This frightens the fish within the circle so that they hide in and around the coral where they are easily speared.

Probably the most popular method of fishing today is that termed annttios, involving the daytime use of underwater goggles (annttios) and single-point metal spear (meca). This method, along with its night time counterpart (annttiosen neepwin) accounts for a large proportion of the total supply of fish. This method is pursued by both men and women, in mixed groups or otherwise; two or three women are often to be seen slowly walking or swimming about in the shallow water offshore, peering down into the water with spear poised ready to strike. Men often pursue this method of fishing in

parties of four or five, going out to the fringing reef in canoes; here, one man usually remains in the canoe, paddling slowly to keep it in position while the rest hunt with goggles and spear. In this case the men throw the fish caught into the canoe, or if alone, or without a canoe, they string them on a thin strip pulled from a green coconut palm frond midrib (isin ny); the fish are strung through the gill slit and mouth and the string tied about the waist. Women, on the other hand, most often use a rectangular, satchel-like basket (kumar) for this purpose, suspending the basket over the lower back or buttocks by a line passed around the waist.

Lobsters (yyr) are taken with the single-point metal spear (formerly with the wooden spear). By an old method, termed aro yyr or ecin yyr, both men and women repair to the fringing reef at night when the moon is full and when the tide is low. There they wade or paddle about looking for a moving lobster. The latter is brought within spearing range by a rather ingenious method, whereby the fisherman holds a small branch, with some leaves attached, in such a way that it casts a shadow near the lobster. According to informants' description, the lobster moves within this shadow, thinking it to be a stone or other suitable shelter; by judiciously moving the branch, the fisherman can then entice the animal within range of his spear.

Many lobsters are caught nowadays by men equipped with underwater goggles and metal spear, who dive down along

the outer face of the fringing reef, stated by informants to be excellent lobster grounds. This method is termed annttiosen yyr.

A fishing method in frequent use today makes use of a light metal spear constructed in such a way that it can be propelled forward by means of released tension brought to bear on a piece of innertube rubber, much in the same way as an arrow is released from a bow. This method is termed nikeppic (from pic, snap, vibrate) the same term being applied to the true bow and arrow. The spear, averaging 3 ft. in length and 1/4 in. in diameter, is pointed at one end while the other end is flattened by pounding on an anvil. A nick is made on this end, at right angles to the flattened surface. A narrow strip of innertube rubber is then doubled and the two ends tied together with a length of string; one end of this string is then tied in a small loop just large enough to fit over the thumb. In use, this loop is placed over the right thumb, and the doubled end of the rubber strip is fitted into the notch made in the flattened end of the spear. The left hand then pulls the spear back toward the body, thus bringing the rubber under tension. When released, the loop around the thumb prevents the loss of the rubber strip.

This method is pursued largely by older boys and men, who swim about the area inside the fringing reef. Underwater goggles make it possible to swim along near the

bottom with the spear held out in front of the body. When a fish is sighted the fisherman sights along the length of the spear and releases it from an average distance of two feet. Small surgeon fish (finäng, Elbert) and other small varieties are taken by this method.

Barbed harpoon for turtles Sea turtles (wiin or pwäpwä) are occasionally taken by harpooning from a paddling canoe at night, using coconut leaf torches, töön. This method is thus termed töön wiin. According to Romonum informants this method was developed during Japanese times and the coconut cord turtle net, still used occasionally on some of the Truk islands, represents an older technique. The harpoon, made from the same material as the single-point metal spear, is fitted at one end with two opposing barbs, staggered slightly. These are fashioned by hammering the original metal rod, thus obtaining slightly flatened surfaces which are then shaped by filing. The opposite end is fitted with an eye through which is rove a heavy cord or rope; this eye is made by heating and bending the end of the rod so that it makes a three-quarter turn. The diameter of the rods used for these harpoons is somewhat larger than that used for single-point spears. The harpoon is attached to about fifteen fathoms of rope.

In practice, two to four men paddle out beyond the fringing reef. One man, the cöön pos (he who spears), stands

up in the front of the canoe holding a coconut leaf torch in one hand and the harpoon in the other; the remaining men paddle. Informants state that the turtle is attracted by the light so that it comes near enough to be speared. A good throw will penetrate the posterior end of both dorsal and ventral shell, thus ensuring that the barbs will not pull loose. When speared, the turtle is allowed to tire itself out by towing the canoe, since the end of the line is tied about one of the thwarts. This may require six or seven hours if the turtle is a large one, after which it is hauled in to the canoe and towed ashore. Turtles are hunted in this fashion only during the period of the new moon, at which time they are said to come within the lagoon for the purpose of laying their eggs on small, uninhabited coral islets.

Multi-pronged spear Fishing with the multi-pronged spear (ȯppong) is an old technique still popular today. The method is termed takkic ik or ȯppongȫ ik. It is practiced only by men, who go out beyond the finging reef, two or three to a canoe, in the early evening, paddling about until midnight or later. The coconut leaf torch (tȫȫn) is used in conjunction with this method, which is done only on moonless nights. The use of the torch, plus the fact that the fish sought, the needle fish (tak, Elbert), lies near the surface, requires that the night be calm with no wind. For this

reason takkic is done mainly during July and August, the period of least wind. In practice, one man, the souwtakkic (master at throwing the multi-pronged spear), stands in the front of the canoe, holding the burning torch high in the air with one hand. The spear remains poised in the other, while his companions paddle slowly, being careful to make no noise. The fish can be seen near the surface, whereupon the souwtakkic spears the fish from the slowly moving canoe, dexterously wielding the spear so that the fish may be removed by one of the paddlers with the least loss of time. The fish are collected in the bottom of the canoe. Informants stated that the long, thin shape of the needle fish requires the use of a multi-pronged spear, since with this spear the fish is most often imprisoned between the closely-set prongs; a single-point spear would be more likely to miss the fish altogether.

The multi-pronged spear is composed of a shaft (inö) cut preferably from green wood of Thespesia populnea (pönö) or less often from Premna integrifolia (wumwukaw); approximately ten circumferential prongs (öytyn) cut from green roots of swamp mangrove (cia); and one center prong (eniiapan) cut from dead cia wood. (See fig. 45). In the latter case, dead wood is said to be preferable since it will take and keep a sharp point better than green wood. Although it is more brittle and thus liable to breakage, it is protected by the ten circumferential prongs. The separate parts of the spear

are made first and are then lashed together with small-diameter coconut fiber cord, nyn.

The circumferential prongs are made by first removing the bark (sinin) from two pieces of mangrove root. By this process termed ettika sinin, strokes are made with a knife in a direction away from the body, reversing the piece so that all bark is equally removed. The two pieces, each about 1 1/2 in. in diameter and 15 in. long, are then split (äsetta) once lengthwise, the resulting four pieces split again, and a few of the larger resulting eight pieces again split so that the result somewhat exceeds ten in number. The extra prongs are made to allow for fitting a variable number of prongs on the end of the shaft and also to allow for breakage during the lashing process.

The splitting, and also subsequent shaping, is done with a small bush knife. Each piece is shaped in turn, beginning with a rough chopping process (fanei). The worker sits on a plank or similar object so that the plank is in front of him, between the outstretched legs, forming a working platform. He rests first one end of the piece, and then the other, on the platform, giving the whole a roughly rounded appearance by means of short, chopping, downward strokes of the knife, rotating the piece the while. By the same process, one end is shaped to a long tapering point. The body of the piece is next rounded further by a shaving process (saaru); the piece is taken in the left hand, palm

up, one end of the piece resting in the palm of the hand and the other end on the muscles on the inside of the lower left arm. The piece is held in place by the thumb and by the fingers, which are curved inward and downward upon its upper surface. The shaving is done with the blade of the knife at practically a right angle to the plane of the wood, the strokes being made in the direction of the body. Most of the saaru process is done over the area of the lower arm so that the piece is frequently reversed in order to ensure overall symmetry. The unpointed end of the piece is flattened for fitting on the end of the shaft by this same saaru process, although in this case only the unpointed end of the piece is in contact with the body, being supported on the cushion of the left palm. The end is shaved down equally from two opposing sides, the strokes going in the direction of the body. Subsequent pieces are compared in order to obtain symmetry; excess length is removed either by resting the piece on the working platform, in which case the excess is removed with a single downward stroke of the knife, or by holding the piece in the left hand and taking off the excess with short strokes while rotating the piece. The completed prongs are fined down by scraping (önöötti) with a piece of glass (formerly with the edge of a small bi-valve termed niittum). The central prong (eniiapan) is made by a similar series of processes, except that both ends are shaped to a long, tapering point.

The shaft (inȯ) is made from a long, straight branch. The bark is removed by stroking with the knife in a direction away from the body. The piece is further shaped, and all traces of bark removed, by shaving (saaru) with strokes made in the direction of the body, meanwhile rotating the piece.

One end of the shaft (see fig. 45) is prepared for receiving the circumferential prongs by first cutting it off exactly perpendicularly; this is done by resting one end-section of the shaft on the plank working platform and making a series of rapid, downward strokes, rotating the shaft the while. The diameter of the shaft is then reduced by cutting away around the circumference to an average depth of 1/4 in., along an area measuring 5 in. in from the perpendicular end. This operation is accomplished by forcing the knife against the shaft, at a point 5 in. in from the end, while rotating the shaft beneath the knife. In this way a shallow cut is made in the circumference of the shaft and the cut is enlarged by notching along the side of the cut nearest the perpendicular end. The worker then seats himself on the ground, supporting the shaft between upper left arm and body. The end section of the shaft which is to be worked is supported in the left hand and the cuts made in a direction away from the body, i.e., from circumferencial notch toward perpendicular end. The blade is forced slowly and carefully through the wood, grasping the knife in the right hand and using the left

fingers against the blunt edge of the blade for added leverage. This cut-away section is called neemwanan.

The flattened portions of the circumferential prongs are arranged contiguously around the neemwanan, their ends butting up against the shoulder, formed by the cutting-away process, such that the outer surfaces of the prongs lie flush with the outer surface of the shaft. The neemwanan is shaped such that its diameter increases slightly toward the distal, perpendicular end; as a result, the outer, or pointed, ends of the circumferential prongs are arranged in a circle, the diameter of which is considerably greater than that of the shaft. This in turn lends greater effectiveness to the spear by giving it a greater striking area.

The circumferential prongs are next fitted to the neemwanan in preparation for lashing. A number of trial fittings are usually required since the prongs must fit exactly around the circumference of the neemwanan with no space remaining between any two prongs. The proper fit is obtained either by reducing slightly the diameter of the neemwanan or by adding an extra prong, as the case may be. The prongs, none of which are absolutely straight, must be interchanged until their pointed ends form a nearly perfect circular pattern. When the proper fit has been made, the prongs are carefully placed on the ground side by side in their relative positions.

Before the lashing is begun, however, the center prong (eniiapan) is forced with the hands into the center of the perpendicular end of the neemwanan to a depth such that its distal end will come flush with the outer ends of the circumferential prongs.

The lashing of circumferential prongs to neemwanan (termed föötti since the line does not pass through any holes in the process) is done with small-diameter, two-ply coconut fiber cord. A slip knot (nikórurur) is tied in one end of the line, and, while the prongs are held in place with the left hand, the knot is passed over the prongs and is fitted snugly against the shoulder at the base of the neemwanan where it is tightened down. (See fig. 46). The line is then dogged four times around the prongs such that the dogging equals the length of the neemwanan underneath. The dogging is then repeated in the opposite direction. The line is next dogged back in the direction of the distal end of the neemwanan and is tied with a double overhand knot about the most distal of the turns made in the dogging operation. The working end of the line is then continued in a straight line for approximately two thirds of the total length of the circumferential prongs (see fig. 46). A loose overhand knot is made in the line, passed over the ends of the prongs, and tightened down at this point. The line is then passed a full turn around the circumference of the prongs, parallel with the first turn made by the overhand knot. The working end

of the line is then forced under and back over the first turn, and continued over the standing part of the second turn, after which it is brought down between two of the circumferential prongs (ŏytyn).

The center prong (eniiapan) is secured in place by a process of passing the line back and forth between opposing pairs of ŏytyn, moving to the next adjacent pair with each crossing (see fig. 47). In each case the line is brought out between a pair of ŏytyn (a) and is given a half turn about the two circumferential turns (b) thus tightening down on all the ŏytyn and firmly securing them in place. The repeated crossings between ŏytyn serve to encase the center prong in a firm mesh of lines. When the last crossing has been completed, the line is passed once around the center prong and is brought out between the original starting pair of ŏytyn, where it is secured with a double overhand knot about the two circumferential turns.

Hooks

Hooks of native manufacture were apparently replaced by European importations fairly early in the post-contact period, with the result that the literature contains surprisingly little information on indigenous types of hooks and the techniques of their manufacture; today it is next to impossible to obtain any reliable information on this subject.

Finsch (1893: 331) quotes Kubary to the effect that fish hooks of turtle shell are made on Truk. The same author (Ibid: 331) mentions that a hook figured in the Senjavin-Reise (Pl. 29, fig. 6) is similar to those found on Truk.[2]

2. Finsch also figures a number of hooks from low islands near Truk which are in the collection of the k.k. Hofmuseum in Wein (1893: 364, Pl. 20). The majority of these are one-piece barbless hooks of mother of pearl from the island of Nukuor (Mortlocks). These hooks have a good bend, in some cases reaching almost a full 360 degrees. The base is notched at the back to afford purchase for a snood which is bound over the base and part way up the bend. A composite hook from Satoan (Mortlocks) is also figured. This specimen consists of a shank of mother of pearl and a barbless point of turtle shell. A line of hibiscus fibers some 3 meters long runs along the inner side of the shank and is lashed to it by means of a hole drilled through the head end; the line is fastened directly to the point, which in turn is lashed to the tail end of the shank by means of two holes drilled through the base of the point. In this connection Finsch says: "An jeder Seite der Verbindungsstelle von Haken und Schaft ist unter die Bindfaden ein Knochen oder Grätensplitter eingeschoben, un den Haken fester anzufügen." (Ibid: 331).

A hackle of black feathers is fastened to the tail end of the shank. According to Finsch the one-piece hook is more common in the area than the composite hook.

Kramer (1932: 142) mentions only that fish hooks were said by his informants to have had barbs (fun, probably fön: thorn, spur) from earliest times. He shows one figure (ibid: fig. 102b) of a one-piece barbed hook having a peculiar lateral extension at the base but gives no information as to material, technique, or use.

Informants on Romonum Island were unable to supply detailed information on primitive types of fish hooks. They confirmed the use of turtle shell and coconut shell, as well as the wood of Pemphis acidula (jeengi) in the manufacture of one-piece hooks, but seemed to have no conception of composite hooks. Only one term (jö) for fish hook is in use at the present time and informants were unable to supply any additional terms.

Lines

Fishing lines (jé) were made by twisting together two strands of hibiscus bast fiber. Today lines of European manufacture are used exclusively.

Deep water lines Deep water fishing with a hand line is termed efief. From one to three men commonly pursue this method of fishing, going out in the small fishing canoe (sein attau) to deep water beyond the fringing reef, this area being characterized by the term neemattau. Sea bass (eni, Elbert) and other large fish are caught by this method. The line is weighted with a small stone fastened in such a way that it can be jerked free when once the hook has reached bottom. The baited hook is placed on the stone, and stone and hook then seized with the adjacent part of the line. A supply of small stones is carried in the canoe since a stone is lost each time the hook is lowered. The bait (ammwön) used is small bits of octopus (nippac) or hermit crab (umoum). This is stated to be an old method of fishing and is still practiced to some extent today.

Surface lines Surface fishing, using a baited hand line accompanied by chum, is known as pöön. Use of canoe and choice of fishing sites is similar to that for efief. The line is kept near the surface so that the fisherman may often see the fish take the bait. Chum (cipön), in the form of pounded claws of a small black swamp crab (kiinen) and of the hermit crab (umoum), is often distributed in the immediate area. The bodies of these crabs are used as bait. A small variety of wrasse fish (cyyföy) is taken by this method, which was stated to be an old one. It is still

practiced to some extent today.

Surface fishing is done in comparatively shallow waters by a method termed käc. This method is a popular one at the present time and is usually done in the late evening from the ends of long stone piers which were constructed on most of the islands during Japanese times. It was stated that käc is an old method of fishing but the statement remains unconfirmed in the literature. A long line, sometimes weighted at the end with a nail, is carefully coiled at the feet; the fisherman then takes one end of the line, with baited hook attached, and whirls it rapidly in front of the body, releasing it at the proper moment so that it flies out over the water for a considerable distance. During the whirling operation the body faces at right angles to the direction of the cast. The line is rapidly retrieved and the cast repeated. A bit of octopus or small fish is used for bait. Snapper (meey, Elbert) are caught by this method.

Float Kramer (1932: 142) reports a kind of float fishing termed emedjior, whereby a float of hibiscus wood is attached to a line such that the hook is situated approximately 1 ft. from the float. The hook is then baited with bits of crab or fish. According to Kramer this rig is watched from the beach, from which it would appear that a line, with float and hook attached, is itself attached to some object in the water -- possibly a pole stuck in the sand.

Rods

Small fish are still taken with rod and line by an old method termed pwou, this term being used also to refer to the rod itself. The rod consists of an unworked stick or pole picked up at random and usually discarded after use. Young and old of both sexes pursue this method from advantageous spots along the beaches, using as bait small balls of cooked preserved breadfruit (öpwöt), fresh breadfruit poi (kön), or soft coconut meat (öpyn), impaled on a small hook. Trigger fish (auppwö, Elbert) and other small fish are taken.

Trolling

The relatively greater winds prevailing from November through January enabled the men to utilize the sailing canoe (meniyk) for trolling with hand lines. By a method termed weierek, large varieties of albacore (toku or ööjen, Elbert) were taken in the open sea, outside the barrier reef. Bonito (angarap, Elbert) and pampano (pöyyr, Elbert) were taken from the waters within the lagoon by a method termed nuk. With the exception of the Pis Islanders, the Trukese have ceased to practice either of these trolling methods.

The weierek method was carried out by trolling back and forth in the open sea just outside one of the barrier reef passes. The best time for this was the period just before dawn, and thus the canoes would set out early in the

night in order to arrive at the fishing grounds at the proper time. The description of this method given by Kramer (1932: 142) indicates that the composite trolling hook with lure attached, common in Polynesia, may not have been used on Truk, at least in weierek fishing: "Bonito catching, which is very highly developed among the Samoans, is also practiced by the Truk islanders and is known as veierek or nug. It is done in the large entrance channels, or in the open sea. Here, as in the Western Carolines, the fishermen have to go through a certain ritual. In November or December they sleep for two or three weeks in the boathouse. They may drink coconut water, but not fresh water, and they may not eat pandanus fruit or oranges. If they sleep in the dwelling house, they believe that they will catch no large fish and that the sea god, Djanuken, will prove harmful....

"When they have reached the fishing grounds, the fish brought along as bait, amon, is split, the hook laid inside, and the two halves bound together, fŏfŏ åmon, and lightly colored young coconut leaves, uput, are tied on as wings (lure). Two lines of hibiscus fiber are used, of double the thickness of coconut twine. One of these is fastened to the outrigger boom, and the other to the lee platform frame, epep. One man sits on the outrigger platform, faraf, and the other on the lee platform, and both hold a line, already made fast, in the hand. They are thus called

dron itëo; the third is the steersman dron muremur (Polynesian: muri "in back"); the fourth tends the sheet, dron ue moell; the fifth and sixth are busy as in reefing sail. When a dron iteo feels a big bite he calls "amara", sail, meaning to haul the sail tight so that the canoe will travel faster; if the fish is small, he says only moell o, meaning to pay out the sail so that less headway is made. The fish is pulled in; when it reaches the canoe one of the handy men seizes the hook and throws the fish into the space in the canoe assigned for this purpose. The job is begun before sunrise and is ended when the sun actually comes up; this is repeated for one or two months."

The method termed nuk, whereby bonito and pampano were caught within the lagoon, was also done from the sailing canoe, in a manner presumably similar to that for weierek, although information as to the type of tackle used is lacking.[3] This type of fishing was done during the day,

3. A sailing canoe from Puluwat was observed within the Truk lagoon in the early part of November; a trolling line was attached to the outer part of the lee platform and was tended by one man seated on this platform. At the end of this line was a wire leader to which was attached a barbed hook of European manufacture. Bits of chicken feathers were tied to the shank of this hook as a lure.

in contrast to weierek.

Kite Fishing

Kite fishing is described by Kramer (1932: 142) who indicates that this technique was borrowed from Nama, to the south of Truk. The kite (asudja) was constructed with a framework of coconut leaflet midribs covered over with breadfruit leaves. A line ran from the canoe to the kite and a second line from kite to water. A piece of hard whitish underskin of the shark was tied to the end of this second line so that it trailed along in the water. This rig was used to catch the needle fish (tak), the sharkskin serving to ensnare the teeth of this fish whenever it struck at the moving lure.

Stone Weirs

Basaltic stone weirs may be observed today along the shores of many of the islands within the Truk lagoon. Questioning of informants on many of the islands revealed that the weirs were built many years ago although opinion differed as to whether they were built by the Trukese or by Satawan Islanders sojourning on Truk. The weirs are seldom used at the present time.

The term given for these weirs is maai, and although a variety of types are observable, informants were unable to give any additional terms. On Romonum, each weir is character-

ized by an individual name; this name does not refer, however, to the type of weir but is rather the name by which each weir is known and differentiated by the general populace. These names are in general derived from some characteristic feature of the weir itself or of the adjacent landscape.

As observed on Romonum, the weirs are of three general types. The first consists of two adjacent half-circles, a larger and a smaller, facing and adjoining to, the shoreline. (See fig. 48). The larger of these is 40 ft. across and extends outward from the shoreline for a distance of 50 ft. The smaller is 14 ft. across and extends outward for 35 ft. These circles are composed of loosely-piled basaltic stones averaging 1 to 1 1/4 ft. in diameter. The width of the walls making up the circles averages 3 ft. The walls attain an average height of 1 ft., or slightly more, such that at low tide the tops of the walls rise above the water line. The area where the two circles adjoin is filled in with stones and at this point also, at right angles to the shoreline, is located a small semi-circular stone enclosure.

A second type consists of a single straight wall (pöyn) extending out at right angles to the shoreline; at the outer end of this wall is located an oblong walled enclosure facing the shore and open at the point of junction with the single straight wall. (See fig. 49). A third type consists of a circular enclosure (epin) located near the shoreline, from which run two oblique walls (pöyn). (See fig. 50).

Fish were taken from these weirs in a variety of ways. By a method termed angamaai, women visited the weirs at low tide and scooped up any fish caught within the weir by the retreating tide, using paired hand nets for the purpose. In those cases, as in type three, where the opening of the weir could easily be closed by means of leaves and branches, the fish thus caught within the enclosure could be netted at any time. Men occasionally went out at night to drive fish into the weirs by striking the water with the mangrove wood fish spear (eppikirup). By this method, known as ä̈cemaai, the fish thus driven inside the weir were either speared or taken up by driving them into a conical trap (un feisin), the mouth of which was placed at an opening in the weir made for the purpose. Small fish such as herring (senif, Elbert), small mackerel (sooren, Elbert), and a popular unidentified fish (umunö̈), were taken by all of these methods.

Traps

Fish traps, the general term for which is uu, are seldom used on Truk at the present time. During a six-month period of residence on Romonum, one of the less acculturated islands, not a single trap of any description was observed in use and it is apparent that only a few of the older men remember the techniques of manufacture of even the simpler types of trap. The most popular trap seems to have been a

lobster pot type, rounded and with a more or less funnel-shaped entrance, the inner, smaller end being suspended in space; this trap, made with pandanus prop roots, was the only type which informants on Romonum were able to reproduce in detail. Informants were unable to supply details or samples of other types of trap beyond name and gross characteristics. These include: a large double entrance trap, constructed with mangrove prop roots; a long conical trap of the same material, and a small grass trap. All these traps are self-acting, although so little information was obtained concerning the last-mentioned type that judgment should be withheld in this case. According to informants, the large double entrance traps were made largely by Mortlockese Islanders to the south, from whom the Trukese learned the techniques of manufacture.

Lobster pot trap This trap (unupwä) was used to take small unidentified fish (tykyfaan and uute) about 8 to 10 in. long. Fish were unlikely to excape from the trap since the funnel-shaped entrance faced inward and was suspended in space. As described by informant Kekkin on Romonum, a number of these traps (as many as ten) were taken by two men in a canoe to the area just within the fringing reef where the branch coral (äcefeenget) grows. The traps were then set in the immediate vicinity after which the fishermen waited for perhaps one half hour before inspecting them again. The

traps were set by scooping out a shallow hole on the bottom, placing the trap in this hole so that the opening faced upward, and then piling bits of coral and stones approximately halfway up the sides of the trap. The trap was baited with a bit of fresh young coconut meat, öppyn. If inspection disclosed a fish within the trap, one hand was thrust through the opening, thus prevemting the escape of the fish, and the trap brought to the surface. This type of fishing might be pursued for one half day or longer, the traps being set over and over again, and the fishermen moving from one fishing ground to another.

The trap was constructed entirely with material supplied by collecting green aerial prop roots of pandanus, nifac. The roots were placed side by side in a bundle, which was wrapped around the middle with a pandanus leaf and carried home on the shoulder. The preparation and use of the roots had to begin soon thereafter, since the roots grow brittle and useless in a comparatively short time. The bark was shaved off with a knife (formerly a small bi-valve termed niittum was used for this purpose) and each root then split lengthwise into a number of strips, each approximately 1/8 in. square and 3 ft. long. The central, pithy section was discarded since it could not be bent and twisted as could the other pieces. Approximately fourteen such strips, white in color, can be obtained from each root.

The technique is one of single pair twining. First, two single weft elements (ifan uu) are fastened together at one end by wrapping tightly with a thin bit of material pulled from one of the pandanus roots. A warp element (wan uu) is then placed with its middle section between the two weft elements, adjacent to the wrapping. (See fig. 51). The weft elements are given a half turn about the warp. The end of the warp farthest from the body is bent a half turn back toward the body, passing between the two weft elements, which are given a half turn about it as before. This bent end thus becomes the second warp element and is placed approximately 1 in. from the first. The twining of wefts about warps is termed ókkúnnu. In the case of the trap observed, the same operation is repeated for a total of twenty two warp elements (or for eleven strips of material, each of which is bent back to form two warp elements). Each new warp element is spaced an average 1/2 in. from the previous element. This line of warps forms the beginning of the funnel-shaped entrance (wotten uu) which, since it will be inside the completed trap, must be made first. The size of this opening is determined by bending the two ends of the completed line inward to form a circle; if the hand can be conveniently thrust through this circle it is large enough. Once the correct size has been determined, the circular shape is fixed by continuing the twining process by spiralling, such that the two weft elements are twined about the warp elements at an average distance of 1 in. from the beginning line of wefts. (See

fig. 52). This spiralled twining is continued to form a circular, more or less funnel-shaped entrance some 4 in. in length and 3 in. in diameter. The entire trap is made with one continuous line of weft, using a spiralling technique and adding new weft elements from time to time. These elements are added simply by placing a new element parallel with the old, with about 1 in. overlap, and continuing the twining.

During the construction of the wotten uu, the free ends of the warp elements run in the direction of the body, and the work proceeds in the same direction. When commencing the body of the trap, however, the piece is reversed so that the warp ends face outward away from the body. The work still proceeds in the direction of the body, however, since the body of the trap must be made to encompass the entrance. The curve of the body of the trap (fig. 53) is begun by bending each warp element back toward the body each time the two weft elements are twined about it. An essential step in attaining the rounded shape of the body of the trap is the addition of new strips, or warp elements. The new element is placed parallel with, and median to, a pair of original warp elements, with its middle section between the two weft elements. The twining is continued about all three warps, after which the end section of the new warp element farthest from the worker is given a half turn toward the body and placed between the weft elements, which are then twined

about it just as was done in the original line of warps. (See fig. 54). The number of new warps added depends upon the degree of roundness desired.

The body of the trap is tapered toward the bottom (epin) by cutting off and discarding a selected number of warp elements as the work proceeds toward the bottom. The bottom is secured by gathering a few opposing warp ends in a bundle and knotting the ends of the two weft elements about this bundle. A small round piece of pandanus root, 3 in. long, is lashed to the bottom with a length of hibiscus fiber line. A loop is left in the line so that the trap may be hung from a rafter or other convenient spot when not in use. The piece also helps to strengthen the bottom of the trap, and helps prevent gradual loosening of the twining at this point.

Double entrance trap Large double entrance traps (unupweeu) were stated by informants on Romonum Island to have been originally an exclusive product of the Mortlock Islanders, from whom the Trukese learned the techniques of use and manufacture. These traps, constructed of strips of wood obtained from aerial prop roots of mangrove, (cia) are taken in canoes to the deep water in front of the fringing reef, where they are placed on the bottom and surrounded and partly covered with pieces of coral and stone. They are left there for three or four days or longer and are not baited since

the stones attract fish. Eels (nopwut, Elbert), Plectoropomus (matou, Elbert) and the unidentified fish seewi, kynyfey, and maramwen are taken with this trap.

Conical single entrance trap A trap termed un feisin was described by informants; this type of trap was not observed nor was it possible to obtain samples. The trap was conical in shape, and up to one fathom in length. It was made of strips of cia wood lashed together with coconut fiber cord. Its use is described in connection with stone weirs.

Grass trap Informants on Romonum Island mentioned a small trap (uunȯm) made by women from pieces of a tough swamp grass. No further information was obtained concerning this type of trap.

Nets

Netting material Netting material for most nets is obtained from Enhalus acoroides (jacȯkken), a kind of seaweed or grass growing near the shore. Techniques of preparation are described under "Fibers and Cordage." Netting line is wound on a flat piece of wood about 1/4 in. thick by 6 in. long by 3 1/2 in. wide. It is stored in this way until needed, when it is wound on the netting needle, the amount wound on the needle depending on the size of the mesh being used.

Jacȯkken is used in making all women's hand nets with

the exception of the largest of these (cuun mweem) which is more often made with the stronger material obtained from hibiscus bast fiber. These fibers are twisted into a two-ply line and are used with needle and guage in the same way as jacökken fibers.

The larger and stronger nets used by men are more often made with hibiscus bast fiber or with small-diameter coconut fiber lines. At the present time, most nets are being made with commercial small-diameter cord or fishline.

The netting needle (tóóttó) is prepared from the dried midrib of a coconut palm leaflet. A section 10 to 12 in. long is split part way in at each end and the netting material dogged back and forth about the body of the needle, passing through the split in the end each time. Kramer (1932: 144) describes the netting needle as made from two pieces of coconut leaflet midrib about 1 ft. long, bound together in the middle, so that there is a split or cleavage at either end.

The mesh guage (afan) is made by splitting off a thin length from the smooth outer surface of an ivory nut frond midrib; this piece averages 9 in. in length, the width varying according to the size of the mest desired.

Netting technique The term for netting with needle and mesh guage is ta. This technique is used in making all women's hand nets and a number of men's nets, although the larger

nets involving the use of coconut fiber lines cannot be made with needle and guage, a ball of sennit being used in this case with a tying technique. All nets involving the use of a needle and guage are made by women, although most men seem to be familiar with netting techniques.

The netting needle is loaded (eseefici) and a guage of the proper width obtained. A short length of line is unwound from the needle preparatory to commencement. The short end of this line is sometimes tied directly to a suspensory cord, composed of a short looped length of hibiscus fiber cord, and the suspensory cord in turn looped over the toe or about any convenient object; or suspensory cord and short end of netting line may both be fastened to the toe or some convenient object, such that the latter lies parallel with the former. The suspensory cord serves as a point of departure for the first row of meshes, after which it functions only as a convenient means of fastening the standing end of the net to some object while netting. The short end of the netting line is not removed from the completed net since it functions in fastening the net to the wooden frame.

The technique is shown in fig. 55. In (a), the netting line (1) is tied to the suspensory cord (2) at point (6). It is brought down behind the guage (3) which is held with the left hand at a distance below the suspensory cord equal to the width of the guage. It is given a half turn and

brought up on the side of the guage facing the worker, where it is held in place with the left thumb (4). The line is then given a half turn about the suspensory cord and is brought down on the back side of the guage where it is held in place with the left index finger. In (b), the line is looped on backside of the guage (5) and the loop held in place with left index finger. The netting knot is made as shown in (c). The index finger releases the loop so that the knot may be pulled tight against the end of the left thumb. The working end of the line is brought around the end of the guage so that it is again on the backside of the guage and the process may be repeated, working from left to right.

The width of the initial row (<u>tetten</u>) of meshes made with the help of the suspensory cord is determined by counting the number of loops made about the cord (loops are counted, not knots). Thus for a fine net, as many as 100 loops may be required. When the end of the initial row of meshes is reached, the guage is removed and the suspensory cord with attached meshes is reversed, so that the work can again proceed from left to right. The guage is placed over the netting line at a distance below the first row equal to one mesh and the line is then given a half turn through the first mesh in the initial row (this mesh is actually the last one made in the initial row, but now, since the work was reversed, it becomes the first mesh in the row). The second row is

completed, the work again reversed, etc., until a sufficient number of tetten have been made.

Types of Nets

Nets seem to be divided into two general types according to whether or not they are framed: the framed nets, usually with handle, are of small to medium mesh, the generic term for such nets being cey (the term epino, stated by Elbert to be the term on western Truk for fine-meshed nets, is occasionally heard on Romonum). Frameless nets, having in general larger meshes, are termed uk. The fine-meshed frame nets are used exclusively by women, while most of the larger-meshed nets, with and without frame, are used by men. The term for mesh is mas (as in mesen cey, eye of the cey net).

Framed Nets

Woman's triangular hand net The basic form of this net is shown in fig. 56. The Trukese recognize a number of subtypes under this category, varying in size of mesh according to the size of the fish taken. The smallest is cuun nienika (cey of the fish nienika, identified as herring by Elbert) with mesh averaging 1/4 to 3/8 in. A slightly larger mesh, averaging 3/8 in., characterizes the cuun noou, used for anchovy. The most popular of these nets, with a mesh averaging 1/2 in., is termed simply cuun attau (net for fishing) and

is used for any of the smaller fish of a hand-length or less. The largest of these nets, with a mesh averaging 1 to 1 1/2 in., is termed cuun mweem. The latter is constructed with netting line obtained from hibiscus bast fiber, the others with a seaweed fiber, jacöken.

The frame consists of two pieces of tuup wood, with bark removed and slightly curved by heating over a fire. The shorter piece, faapac, is equipped with a foot at one end, which is lashed to the end section of the longer piece, ipwo. The projecting ends of both pieces serve as a handle. A line of hibiscus fiber is strung about the inside of this frame and crosses between the distal ends of both pieces, where it is termed nöön. This line is used in attaching net to frame. When not in use the netting material is rolled up on the ipwo.

These hand nets are used by women on the shallow flats inside the island fringing reef, where they most often operate in groups of three or more, each individual equipped with a pair of nets, one in either hand. The fish caught are placed in a plaited palm leaf basket (kumar) which is carried high over the buttocks by means of a tie-line passed around the waist.

Among the various methods involving the use of the woman's triangular hand net, perhaps the most popular is that termed sösö. It can be observed today on all the islands within the lagoon and is mentioned by Kramer and others as

in frequent use. This method is practiced usually by from ten to fifteen women, walking about on the shallow flats near shore, preferably when the tide is coming in. The women form in a rough line until a school of fish is sighted, whereupon they attempt to encircle the fish, each woman holding her two nets out to either side so that they join those of her neighbors. They move carefully lest they frighten the fish. Once a large circle has been made about the fish, it is usually broken up into two smaller circles, each of which is then progressively tightened until the fish in the middle can be scooped up in the nets. Essentially the same method may be pursued at night also, in which case it is termed cyyfana. By this method the women form one large circle which is progressively tightened without breaking up into two smaller circles. The fish taken is the needle fish (fɔana) which is said to sleep near the surface, so that the nets in this case are merely scooped along the surface. It was not ascertained whether torches are used with this method.

A method somewhat similar to sɵɵsɵ is that termed pwyn, involving only two or three women, who act more or less independently in contrast to the cooperative action involved in sɵɵsɵ. The pwyn method usually occurs when someone on shore notices a group of birds diving after a school of fish. In this event, those women present grab up their nets and pursue the school independently of one another. A net is carried in either hand and is held well above the

water until fish are spotted, whereupon the nets are brought down and together under the water in a swooping motion, the woman ducking her head under water at the same time. The fish caught are placed in the kumar fish basket.

A method involving the use of larger-diameter hand nets (cuun mweem) was described by informant Kekkin on Romonum. This method, termed mweem, was done during the day by both men and women, five to ten individuals of each sex ordinarily participating. The women repaired to the island fringing reef whereupon the men drove fish toward them by pounding spears on the water. The fish were taken by the women in their nets while those escaping under stones and coral were speared by the men.

Circular hand net A framed, circular net equipped with a handle is still used to take an unidentified reef fish, umunö. The net is thus termed cuun umunö, although the terms epiruu and cuumwe are also used. This net is usually of such size that more than one man is required to operate it (see fig. 57). Larger nets of this type are stated to be capable of holding three to four hundred fish. The umunö fish, which occur in large schools, are driven toward the net by shouting, pounding on the water with spears, and throwing stones. Men are stationed along the way to prevent the school excaping off to the side. Coconut leaf sweeps may also be used to drive fish into the waiting net. This

type net is no longer made on Romonum, where a woman or women with handnets is substituted for the cuun umunö. It was not observed on any of the other islands within the lagoon with the exception of Pis Island, where it is still made occasionally. Taking the umunö fish with this net is termed angö umunö.

Flying fish net A net for taking flying fish (mönger) was formerly used by men at night from a canoe, in conjunction with a coconut leaf torch (töön). The net, termed cuun mönger, is described by informants as having a small frame composed of two sticks (ipwo) and a long handle. The sticks were lashed together at one end and each was then bent outward to form a circular pattern, their other ends then being lashed one to each arm of a long forked stick, which constituted a handle. A net made from hibiscus fiber line was then attached to the frame. In use, two men ordinarily went out in a canoe on a still windless night, one man paddling and the other standing up in the canoe with torch in one hand and net in the other, netting the fish attracted by the light.

Frameless Nets

Turtle net A frameless net of coconut fiber lines (uuk) was formerly in general use on Truk for catching sea turtles (pwäpwä). A net of this type was observed on Pata Island, stored in the Nuukaf village wuut since it is no longer being

used. (See fig. 58). The net is 77 ft. in length and 9 ft. in width. The diameter of the mesh is 9 in. Coconut fiber ropes of 1/2 in. diameter span both longitudianal edges and both ends, and the netting, of 3/8 in. diameter doubled sennit cord, being attached to these ropes. There is in addition a semi-circular rope attached at either end.

To make the net, two hanks of line are prepared by winding on the hand, using a technique termed peiór (described under "Fibers and Cordage"). One man commences in what will be the center of the net, making a row of meshes across the width of the net by a tying technique (see fig. 58); neither netting neddle nor mesh guage are used in this technique. The technique consists in making a series of knots using the two separate lines, or hanks. After the first row of meshes has been completed, the original worker is joined by a second, each man then working toward his respective end of the net. The net is attached to the longitudinal and end ropes by giving the netting line a half turn about the rope at the completion of each row of meshes, (see fig. 58).

According to Romonum informants, the turtle net was used at night, during the breadfruit season (July and August) when the tide is particularly high. One informant stated that the turtles come in near the shore at this time in order to eat the seaweed (jacökken) which grows there. Prophetic knot tying (pwe) was used to determine the exact night on which a turtle would be likely to appear. It was not

ascertained whether or not torches were used with this method, termed uukẇen pwäpwä. A number of men handled the net, which was stationed in fairly shallow water, while other men drove the turtle into the net. The net was maintained in an upright position by means of a series of long poles (ipwo) spaced an average of 10 ft. apart along the length of the net. The net was attached to these poles by giving each of the two longitudinal edge ropes a full turn about each of the poles, one at the bottom of the pole, the other spaced a distance on the pole equal to the width of the net. The poles were of such length that they projected some 2 ft. above the net. The net was arranged in a semi-circle with the bottom ends of the poles resting on the sand and the top edge of the net projecting somewhat above the surface. A man was stationed at each pole to hold the net upright and to close the net once a turtle was taken. The animal became enmeshed in the net and was dragged on shore where it was either speared or left to die. When not in use, the net was rolled up and kept in the wuut.

A net similar in size and form to that used for taking turtles was used also for taking a large species of wrasse fish (ykyca), by a method termed angöykyca. This method was practiced by men during the daytime, on the shallow area between island and fringing reef. The net was set up in a semi-circle and supported by poles in the same way as described for the turtle net. Men stationed at each pole

were equipped with spears on which they impaled the fish as they were driven into the net by other men throwing stones and beating the water. Still other men were stationed along the way to prevent the fish from fleeing off at right angles.

Modern seine net Modern seine nets, equipped with floats and sinkers, and supplied by the Americans since the end of the war, are to be found on many of the islands. On Romonum Island, at least, the use of this net constitutes probably the largest source of fish at the presetn time. The net is owned and operated by one man who also operates the local pompom, or Japanese deisel-powered fishing boat. He is assisted by a paid crew and the catch is sold to the people by the pound.

The method of using this net, termed kêtur, involves going out to the lee side of the barrier reef where fishing is carried on for an entire day. Okinawan-built canoes (kerekker) are towed behind the pompom and are used in laying the net. The net is laid in a semi-circle by the paid crew, whereupon a number of passengers, both men and women, proceed to drive fish into the net. Those fish within the net are speared or hauled aboard by the crew and belong to the owner of the pompom, while any fish remaining outside the net may be speared and kept by the passengers. These latter pay for this privilege by driving fish into the seine.

This process is repeated again and again until nightfall or until the schools of fish give out. Five hundred or more fish may be brought back from a successful day's fishing. A great variety of fish is taken by this method, chief among which is the unidentified reef fish, umunö.

Modern throw net An increasingly popular method of taking fish is that involving the use of a modern-type throw net (tööndja). Informants state that the construction and use of this net was learned from the Japanese. The net is made today with commercial thread and a European type netting needle made from a strip of ivory nut palm frond midrib. The net is weighted with commercial lead weights. The net is made by women but used by men just offshore, usually during the day, but also at night during a full moon.

FOOD

Introduction

The various food items which comprise the Trukese diet are arranged in the following list in the order in which they contribute to the total food supply. This rank order is based primarily on observations made on Romonum Island plus data supplied by Hall and Pelzer (1946: 34-48) for the whole of Truk. Some of the items included in the list, as dog, honey, yam, turmeric, are utilized rarely if at all at the present time and thus their relative importance can be arrived at only from statements by informants.

Breadfruit (mäi)

Fish (ik)

Taro (native varieties are ôni, puna, kä, and etipo)

Coconut (ny)

Cassava (maniôc)

Sugar cane (woo)

Banana (uuc)

Sweet potato (komy)

Octupus (nippac)

Crab (native varieties are amatang, nippwei)

Shellfish (pwaset)

Trepang (native varieties are mwänenep, penicôn, etc.)

Papaya (kippway)

Pineapple (painaper)

Soursop (sasaf)

Pig (pik)

Chicken (cukȯ)

Dog (konak)

Sea turtle (pwäpwä)

Wild fowl (macang)

Wild orange (gurugur)

Arrowroot (mökymök)

Mango (mangko)

Watermelon (sennia)

Yam (eep)

Turmeric (äfän)

Pandanus (fac)

Honey (minen cynen)

Marginal, or famine, foods including: heart of palm (eeryk), Dioscorea bulbifera (pwereka), Ipomoea gracilis (ruke), Ficus tinctoria (jöwöön), etc.

In addition, rice, tinned meat, sugar, and other European foods are purchased from local stores whenever possible.

Acquisition of Food

Tubers, roots, and similar crops, are dug out of the ground with the mangrove wood digging stick, (wȯt) or any stick which may be handy. Breadfruit are plucked from the trees with the breadfruit picker, ias. Coconuts are obtained

by climbing trees; in former times with the help of a climbing bandage (efis) and today by utilizing a series of notches cut into the tree trunk.

Food is transported from field to cookhouse in a variety of palm leaf baskets. One of the most common of these baskets is that termed föyföyirökuum, a temporary affair which is plaited around the object to be carried and is discarded after use. In it are carried husked coconuts, taro, cassava, and other root crops. A larger, triangular basket, äpimar, is used for breadfruit, coconuts and other crops, and may be used several times before being discarded. The most popular basket at present is that termed cykken seippan, which was presumably introduced from Saipan, as the name indicates. This basket is used most often in pairs, one on either end of a carrying pole (jööwefar or einiwo) and is used chiefly for transporting breadfruit. Well-made baskets of this type may withstand a month or more of hard use. A rectangular basket (kumar) is used by women for carrying small fish from the shallow areas along the shore where they practice a variety of fishing methods. The men bring in their fish either strung through gill slits and mouth or impaled through the center on a metal spear.

Preserved Breadfruit

There are two basic methods of preparing preserved breadfruit, termed maretip and pwinieepwin. These terms

refer both to method and to product, although the general term for the latter is öpwöt. Both methods involve the construction of a pit (nas) in the ground, in which the breadfruit is stored and allowed to ferment, but they differ in the size of the pit used, varieties of breadfruit used, and details of placing in the pit. The former is considered the better-tasting but is actually made in less quantity than the latter since only the better grades of fruit are used. The pits (nas) are located on lineage lands near large stands of breadfruit. A lineage may possess several pits, depending on the amount of breadfruit to which it has access and pits are made and filled, and the product consumed, cooperatively by lineage members. The smaller pits, about 3 ft. in diameter, are called naskisikis, while the larger ones, 6 or 7 ft. in diameter are called nasekòcy or nasenòm.

Maretip is made during the early part of the main breadfruit season, i.e., during May and June. The varieties of breadfruit used are: enim, meiror, meimotou, wanumyyr, faiine, and epiirau. The small pit (naskisikis) is utilized, and is first lined with leaves (no specific kinds of leaves are used since they will later be removed and replaced by banana leaves). A number of breadfruit are gathered, and placed in the pitwith no preliminary preparation. These are covered over with leaves and left in the pit over night. The following day they are removed, scraped, and cut into pieces, tiben. The pit is then lined carefully with banana

leaves on which the tipen is placed and covered with more banana leaves and stones. After approximately a week a second batch of breadfruit is gathered and is treated in a similar manner, being mixed in thoroughly with the fruit already in the pit. This same operation is repeated several times, at weekly intervals, until the pit is full, after which it is covered over well with banana leaves and stones. The pit is inspected periodically in order to replace parts of the banana leaf lining, since rats, dirt, and worms contaminate the ŏpwŏt otherwise. Maretip is considered better tasting than pwinieepwin and is consumed first although it is still good after a year or more in the nas. Maretip is used for the annual breadfruit feast (umusŏmwon) whenever available.

Pwinieepwin is made later in the breadfruit season and contains a higher proportion of inferior fruits since the gleanings of the crop are incorporated in its preparation. The varieties used are ŏfa, mŏryp, meesŏsŏ, and seewăn. In this case, the large pit (nasekŏcy or nasenŏm) is used, and is lined with banana leaves. In this method, a number of breadfruit are piled beside the pit, covered over with leaves, and left over night. The following day they are scraped and cut into tipen, after which the pieces are left in the sun for a few hours. They are then gathered up, placed in a pile beside the pit and covered over well with leaves, in which state they are left for two or three

days. The fruit in this pile is referred to as sefey. After two or three days, fresh breadfruit are gathered, scraped and cut into tipen, following which, this fresh fruit is put into the nas along with the sefey. The two are not mixed, but are put in in alternate layers, a layer of sefey followed by a layer of fresh fruit, until the pit is completely filled. The whole is then covered with banana leaves and stones. The öpwöt prepared by this method may be as much as two years old when eaten, and is slightly black in color. It is eaten after the maretip has been exhausted, and is also used in trade and in gift giving.

Preparation of Food for Cooking

Before food products can be cooked or used in cooking, they must be prepared in various ways.

Breadfruit If breadfruit is to be steamed or cooked in the earth oven, or cooked in the iron cooking pot, it is first scraped and then sliced. The scraping of the outside rind is done with a small shell scraper, ngingi. The worker squats or sits, holding the fruit in front of him with the left hand while the right hand operates the scraping tool. The fruit is placed end up on a hard surface, as a board or stone. Beginning on the upper end the scraper is passed over the rind in a series of quick downward strokes while the fruit is being rotated with the left hand. The strokes

are always made on the side of the fruit which is farthest from the worker. When the upper end has been scraped down as far as the middle of the fruit, the ends are reversed and the process repeated. After being scraped, the fruit is sliced. Again the worker squats or sits, holding the fruit in the palm of the left hand. The right hand wields a knife with which the fruit is first cut in half by a downward stroke which passes through practically to the hand beneath, the two halves being separated by a quick sideward twist of the knife. Each half is then cut through in a similar manner. The resulting quarters are then held in the left palm one by one and the attached portion of the hard center core is chopped away by making a stroke at an angle down and away from the body; the piece is reversed and the stroke repeated so that the resulting cut is in the shape of a wide-angle V. The pieces thus prepared are collected on banana leaves and are ready for cooking.[1]

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1. Informants state that formerly a piece of coconut frond midrib, sharpened on one edge by means of a shell or coral abrasive, was used much as a knife is used today in preparing breadfruit, taro, etc.

Cassava Cassava tubers are skinned with a knife and can then be cleaned by scrubbing with water and the clean, or inside

side, of a dead coconut husk. The tubers are then sliced transversely into several pieces. Taro and sweet potatoes are not skinned, but merely washed in fresh water and the larger tubers sliced transversely a few times. Bananas are cooked whole and unpeeled.

Preserved breadfruit The preparation of preserved breadfruit (ŏpwŏt) is somewhat more complicated. If less than a year old, it is necessary to thoroughly mix and knead ŏpwŏt with fresh water before cooking, and in any case it is necessary to bundle it in leaves before cooking, due to its more or less fluid consistancy. Before the ŏpwŏt can be mixed with water, however, a bit at a time is placed on the wooden mortar (nyyf) and pieces of skin and dirt are removed and lumps worked out by kneading with the palms of both hands, the while turning the mass over and over on the mortar. The cleaned and smoothed mass is then shaped into a round "loaf", of the consistancy of bread dough. A depression is made in the center of the loaf and fresh water is added a bit at a time, while the "loaf" is repeatedly turned in upon itself, toward the worker, thus thoroughly mixing breadfruit with water. The mass now has the consistancy of plaster.[2] The next step is that of putting

2. Today, many families mix their ŏpwŏt with water in the large iron pot, kama, and dish it out with a tin dish.

this mixture in leaf bundles.

The leaves to be used for these bundles are arranged beforehand in a pile, the pile consisting of repeated series of leaves, each series to constitute the wrapping for one bundle. A series commences with one large green breadfruit leaf with the stem attached, so placed that the stem is toward the worker. On top of this is placed a smaller breadfruit leaf with the stem removed, and facing in the opposite direction. The third leaf is a repetition of #1 leaf.[3] In filling a bundle, one person picks up a series

3. Another technique of arranging leaves is to alternate one or more tuup (Macaranga) leaves with the breadfruit leaves. Stated that the tuup leaves are more impervious to liquids and will thus better contain the breadfruit mixture.

of leaves which he holds in the palms of both hands while a second worker scoops up the ŏpwŏt mixture with his two hands cupped together and deposits it on the leaves; one or two such scoops suffice to fill a bundle. The leaves are then placed on the ground for folding, oriented in the same way as on the pile. First the two sides are folded inward, one over the other and while this overlap is maintained with the left hand, the right hand bends the two butt end lobes of the bottom leaf up and on top of the bundle. Next the ends opposite the worker are folded up and

on top of the overlap and the bundle is placed upright on this folded end so that the end that was nearest the worker can also be folded up on top of the overlap. The completed bundle is then placed on the ground with all folds downward. Such bundles are ready for baking or steaming in the earth oven or for cooking in the iron cook pot.

Coconut Coconut meat is used extensively in cooking operations, for which purpose the meat is expressed by hand or more usually in a cross-beam press (wycyyc) in order to obtain the liquid milk or cream. Coconuts are husked on a husking stick (wȯt) and the nut hacked or chopped open with a knife, thus obtaining two hemispheres. These are in turn grated on the coconut grater, pweiker. In grating coconut, the worker sits on the wooden stool (wassan pweiker) and grasps a half coconut in both hands; the piece is then passed over the denticulated iron grating implement (pweiker) using short, rapid strokes downward and away from the body, rotating the piece in the hands the while. The gratings fall on a clean banana leaf or other suitable material. If the gratings are to be expressed by hand, a piece of clean coconut stipule (eysses), the size of a handkerchief, is used. A handful of gratings is placed on this cloth-like substance and the four corners are folded up into a "neck". This "neck" is then grasped in the left hand and the "body"

is squeezed and twisted with the right hand. The expressed milk thus obtained is collected in a bowl or expressed directly on the food with which it is to be combined. The dry gratings remaining after the squeezing operation are not eaten or combined with food in any way, but may be tossed on the water to attract fish in conjunction with hand net fishing by the women. These gratings are also good for making smudge fire at night to repel mosquitoes; they burn slowly and with much smoke.

Arrowroot The preparation of arrowroot (mwökymwök) involved a long and complicated process whereby the tubers were grated, the gratings mixed with water and strained through a cloth to obtain a starchy liquid which was allowed to stand so that the starch (soon mwökymwök) precipitated out. First, the skin was scraped from the tubers, using a half of a bivalve (nittum) for the purpose. The tubers were then grated on the coral grater (feiir) after which they were strained through a piece of plain woven hibiscus fibers, toonôm. This fabric was supported on a framework of poles at a sufficient height for a large wooden bowl to be placed beneath the cloth. The framework and cloth as a unit were termed côcôn mwök. This straining, whereby starch was removed in liquid form, was accomplished by pouring large quantities of water (fresh or salt) over the gratings and kneading them well with the

hands so that the starch, combined with water, passed through the strainer into the bowl below. When full, the bowl was set aside and the starch allowed to precipitate out, after which the water was poured off. Fresh water was added and the starch again allowed to precipitate; this might be repeated several times in order to rid the starch of a characteristic bitter taste. The starch obtained by this process was cooked by stone boiling or baked in the earth oven. This process, as described for arrowroot, is essentially the same as that used to obtain a yellow powder (teik) from turmeric roots, and can occasionally be observed today in connection with the preparation of a special cassava dish.[4]

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4. Cassava was processed by this method at Christmas time in conjunction with a competitive food fight between several of the lineages on Romonum. Techniques used were observed to be similar to those described for arrowroot with the exception that the roots were grated on pieces of tin in which a number of holes had been punched with a nail and hammer. The strainer consisted of a piece of burlap supported on a framework of hibiscus poles approximately 3' square by 3'6" high. The four corner poles were supported by two lengths of ivory nut frond midrib, by making holes in the midrib and forcing the poles into the holes. The iron pot, kama, was used in place of a wooden bowl.

The cassava starch, soon maniòc, obtained by this method was boiled with water and eaten without further treatment.

Banana Quantities of ripe bananas are assured for feasts and special occasions by putting bananas in a hole in the sand for a few days and keeping them covered over with leaves. To treat bananas in this manner is irei uuc.

Fish Before fish are cooked they are prepared by removing entrails, scales, etc. Small fish of about a finger's length are not scaled but larger fish are scaled by forcing the fingers against the scales, thus bending them backward and breaking them off; when available a knife is used for scaling and for all succeeding operations.

The entrails of fish a hand-long or less are removed by heating the anterior ventral area just around the ventral fin, after which the fin is pulled off, a hole punched in the soft skin with the finger, and the body of the fish squeezed, thus forcing the entrails out through the hole. For baking in the earth oven and for broiling on an open fire, the removal of scales and entrails as described above completes the preparation. Today fish are salted down whenever salt is available, in which case the entrails are removed through a cut in the belly; the fish is laid open

and salt can be applied on inside and outside.

There is a preference for meat which is slightly high and for this reason fish, crab, octopus, trepang, and shellfish, are not usually eaten immediately after being caught, but are kept in or around the house for a day, and sometimes slightly longer, until they emit an odor, mei pwȯnow. In this slightly decomposed state, the meat is usually wrapped in green breadfruit leaves and roasted over live embers, a method termed tykiefi. Meat, in particular fish, could be kept a matter of days by a process of baking or roasting several times; today, fish are kept a week or more by thoroughly rubbing the uncooked meat with salt.

Turtle The sea turtle, pwäpwä, is prepared by baking in the earth oven by first removing the entrails. This is accomplished by cutting away the flesh between one of the hind flippers and the ventral shell, making an opening into which the worker thrusts his hand and pulls out the intestines; these are later cut into convenient lengths and the contents forced out by running the fingers down the length of the segment. These segments are washed thoroughly, cut into small pieces, and cooked in an iron cooking pot. Following the intestines, the liver is removed and bundled in breadfruit leaves preparatory to baking in the oven along with the turtle. Finally, the blood is removed from the body cavity by dipping it out with a coconut shell half or, more often today, with a tin

cup. The blood is transferred to a number of tin cans (formerly, coconut shell flasks (pöör) were used) which are placed in the oven alongside the turtle; blood which is baked in this manner is eaten as an accompaniment to breadfruit poi or preserved breadfruit and is considered a delicacy. The animal is laid in the oven on its back, a few hot stones are thrust into the body cavity and the opening plugged with green leaves. Hot stones are placed around the sides and on top of the turtle and the whole is covered over with leaves and grass.

The process of baking pig, dog, and chicken in the earth oven is stated by informants to be similar to that described above for sea turtle. There was no opportunity to check this by observation, however.

As far as could be ascertained, the raw fruits of pandanus, papaya, pineapple, soursop, and orange are consumed with no preparation. Sugar cane is ordinarily eaten raw with no preparation although it is occasionally expressed on the cross-beam press (wycyyc) and the juice thus obtained fed to babies and small children.

Fire

The word for fire is ekkei (äf in western Truk). At the present time, matches are in general use and older methods of fire making are resorted to only in emergencies; practically all the men, however, can demonstrate the old

fire plough method, which seems to have been the one most favored in former times. Flint and steel are used occasionally but appear to be a relatively recent introduction. Bollig (1927: 192) mentions a method used by women whereby a pointed rod is placed on dry wood and twisted quickly in the hands. Elbert (1947: 264) gives the term niök for this drilling method. Informant Kekkin on Romonum Island had heard of this method but had never seen it performed and was unacquainted with the term as given by Elbert. Kramer (1932: 124) mentions the possible occurrence on Truk of an Indonesian fire saw similar to that found on Tobi; the same informant appeared unfamiliar with this concept also.

The fire plough method, termed öpurök (ytyyt on western Truk) seems to be practiced exclusively by men, possibly because of the strength and endurance needed to complete it successfully. The method consists in moving a pointed stick (nöyn, child) back and forth in a grove made in a stationary stick (inan, mother). The latter must be a comparatively soft wood, usually hibiscus (sinifö) in relation to the former, which may be Premna integrifolia (wumwukaw), Ficus tinctoria (jöwöön), or some other hard wood. In both cases the wood used is dead and dry, and stripped of all bark. The nöyn is flattened slightly at one end and both lateral edges at this end are beveled to form a blunt point; the piece is cut to a length of about 7 in. The inan, averaging 24 in. in length, may be flattened

slightly on the bottom to prevent too much movement, after which a shallow groove about 5 in. long is cut in the top side. The pointed end of the nöyn is then moved back and forth in this groove, the beveled edges facing in the direction of the longitudinal groove axis. Usually two men cooperate in this method, one holding the inan while the other does the work, in which case the latter kneels, keeping the arms as straight as possible in order to gain greater pressure. The nöyn is grasped at a slight distance from the pointed end, as in fig. 59, and is moved back and forth with an arm and shoulder motion rather than a wrist motion. The ploughing movement gradually accumulates a small pile of shavings at the end of the groove opposite the worker and as the work becomes faster, and with more pressure, these shavings commence to smoke; at this point the strokes are kept as near the smoking shavings as possible and are made with great rapidity and force. When the shavings commence to glow, the work ceases and the glowing shavings are tapped off on to some fuel, as a dry coconut husk.

The method may also be accomplished by one person, in which case the worker sits, holding the inan stationary in front of him between the feet. An experienced worker can produce fire in one or two minutes by either method.

Cooking Techniques

Traditional methods of food preparation included

baking and steaming in the earth oven, broiling and roasting over an open fire, plain boiling in a shell pot, and stone boiling in a wooden vessel. With the introduction of European trade goods, iron cooking vessels largely replaced the earth oven and entirely obviated the need for shell and wood cooking pots. At the present time a great many of the traditional methods of preparing staple foods are still practiced, although cooking utensils of foreign manufacture are substituted wherever possible. Thus the preparation of breadfruit in the earth oven is restricted largely to the annual breadfruit feast at which time first fruits are presented to the chiefs. In many instances the traditional method of preparing a particular item has been generalized to cover the preparation of an introduced food item; this has occured, for instance, in the generalization of arrowroot preparation to one of the methods of cassava preparation.

Earth oven The term umuni is a general one covering a number of methods of cooking food in the earth oven, um. Aboriginally, an earth oven was located in each lineage cookhouse (fanang) and was used for all major cooking operations, including preparation of breadfruit, taro, sea turtle, pig, chicken, dog, and large fish. Smaller amounts of food, as individual breadfruit, fish, etc., were roasted or broiled over an open fire.

The earth oven was used to a great extent to bake i.e., in dry heat, both vegetable and animal foods, but was used

also to steam certain items, in particular breadfruit which was to be pounded later into poi.

Taro, sweet potatoes, and bananas were baked by a method termed kuum, in which two holes or pits were utilized. In one pit stones were heated while a lining of green swamp taro leaves and grass was placed in the second pit. Items to be cooked were placed on this lining, covered first with more leaves and grass, and then with hot stones, over which a covering of green leaves and cold stones was placed. The food was allowed to bake and could then be removed, or left in the pit over night and consumed the next day. This method of preparation was considered best for upland taro (kä) but other foods could equally well be baked or steamed.

The general term for steaming food in the earth oven is juuti, but various techniques of steaming are characterized by different terms. Thus cipwecip, the most usual method of steaming small amounts of breadfruit and taro, involved the use of two pits, in one of which stones were heated, and in the other of which was placed a lining of kä leaves and mönnow (Acalypha trukensis) leaves, the latter with stems removed. When the stones became hot, they were rolled out of the pit with a green stick, and picked up one by one between two pieces of coconut husk and placed in the second leaf-lined pit. A layer of grass on which were placed the items to be steamed was placed on top of the stones, fresh water poured over the whole, and the whole covered with a

layer of kä leaves and allowed to steam from one to two hours. The food to be steamed was either cut into pieces and wrapped in leaf bundles or the pieces placed on the leaf and grass lining without being bundled. In the former case, the wrapping consisted of three or four breadfruit leaves with outer wrap of one swamp taro leaf.

A second method of steaming food in the earth oven, used chiefly for the preparation of breadfruit in large quantities, as for the annual breadfruit feast, is termed epinfanang, and is still used today on special occasions. In this method a single pit pwangen um is used; the pit varies from 2 to 4 yards in diameter and from 2 to 3 ft. in depth, depending on the amount of breadfruit to be steamed.[5] Basaltic stones averaging 5 or 6 in. in diameter

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5. Breadfruit is usually gathered in the basket, cykken seippan, which is carried in pairs, one basket on either end of a shoulder pole. Large baskets are capable of holding up to 15 breadfruit, or 30 fruit per pair. A pair of loaded baskets is referred to as efȯc, two pair as ruuefȯc, etc. Informants estimate that 45 to 85 fȯc (1350 to 2550 breadfruit) would be required for a large oven.

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are placed on the bottom and sides of the pit (fȯyyum) and a fire is built on these stones (soni um). When the stones are red hot, the remaining logs, embers, etc., are pushed

aside and the stones are tamped down to a compact mass (ӧry um), using a long green pole for the purpose. The hot stones are then covered with a layer of small pieces of green banana tree trunk on which the sliced breadfruit (tipen) is placed. The tipen is not wrapped or bundled in any way, but is covered over thoroughly with a layer of kӓ and papaya leaves, and a final layer of green grass. A small opening is left in the center of these layers, and fresh water is poured through it on the hot stones below (juuti um), the opening then being closed over with more kӓ and papaya leaves. The fruit is allowed to steam for approximately one half hour, after which it is taken out (suki um) and pounded into poi.

The cooking of preserved breadfruit (ӧpwӧt) in the earth oven involved a separate terminology and set of techniques. For everyday purposes, the preserved breadfruit was wrapped in leaf bundles (after having been prepared by mixing with fresh water) and baked in the oven. In this method, a layer of hot stones was placed at the bottom of the pit, followed by several layers of leaves and grass alternating with layers of bundled ӧpwӧt, a layer being known as siseren cifey. The whole was covered over with leaves and cold stones and allowed to bake in dry heat.

A method of steaming preserved breadfruit (umutjuut) was used only on special occasions, as at the annual breadfruit feast when first fruits were presented to the chiefs.

The öpwöt was first prepared by mixing with water, after which the greater part was wrapped in leaf bundles. The remainder was put in four or five open-mouthed palm leaf baskets (cykycapwen) which had been previously lined with green breadfruit leaves, and which were then tied up tightly at both ends and middle with lengths of palm frond leaflets. These filled baskets were then stacked, in the rough form of a tipi, on a layer of grass, which in turn had been placed on a layer of hot stones. The bundles of öpwöt were then packed in around the baskets, and the whole covered well with leaves and grass. An opening was left in this top covering through which fresh water was poured, the opening closed with more leaves, and the food inside allowed to steam. The baskets and bundles of cooked öpwöt were later taken to the breadfruit feast, where the former were presented to the chief and the latter consumed by lineage members.

Broiling and roasting in open fire For quick, easy preparation, a few breadfruit can be roasted directly in the flames of a small fire, apwici mäi. A fruit which is done will emit a hollow sound when snapped with the finger. The fruit is removed from the fire and doused with water. The burnt skin is scraped off with a small bi-valve (nittum) and the fruit pulled apart and eaten with the fingers. If particularly hot, a small stick, sharpened at one end, may be used. The lightly browned area directly under the charred skin is left

on the fruit, and is considered particularly tasty.

Small fish are usually roasted (apwici ik) over live embers but not directly in the flame. Both fish and octopus may be wrapped in green breadfruit leaves and roasted over live embers. This technique is termed tykiefi, and is used in particular for meat which has been allowed to become slightly soft and high. If small, several fish are wrapped in one bundle, and larger fish are cut into smaller pieces and treated likewise.

Boiling An old method of cooking breadfruit and taro (rŏŏrun mäi, rŏŏrun ŏni), involved the use of a shell cooking pot. For this, the inside part of a trochus or conch shell was removed. Slices of breadfruit or taro were cooked in fresh water, the water then poured off, and expressed coconut milk added. The mixture was allowed to boil for a short time, after which it was poured off into a wooden bowl and eaten hot or cold. The general term for a shell cooking vessle is mweiän, and to cook with one is mweiänei. Today, a small iron cook pot is substituted for the shell vessel.

Informants mention an old method of cooking preserved breadfruit (ŏpwŏt) by stone boiling in a wooden vessel. The name of this method is given as mar mei ŏruŏr. The ŏpwŏt, or mar, was mixed in the vessel with fresh water, hot stones were added, and the mixture stirred with a stick until cooked.

Precipitated arrowroot starch was mixed with fresh water and boiled in like manner.

Today, breadfruit (both fresh and preserved), taro, cassava, sweet potato, and banana, are boiled in cast iron cooking pots. Except in the case of preserved breadfruit, the iron pot is first lined on the inside with a layer of green grass on which the food is laid and fresh water added. The whole is covered with dry-land or swamp taro leaves and allowed to boil. Breadfruit and cassava are peeled and cut into smaller pieces before being placed in the pot, while potatoes, bananas, and taro are left with skins on and at most are cut into a few large pieces. Preserved breadfruit is first mixed with water, then made into bundles with leaf wrapping, and placed in the iron pot in rows, each bundle standing on end. Water and a covering of leaves is added as for fresh breadfruit, taro, etc.

Post-Cooking Preparation of Food

Following the initial cooking operations, most foods may be eaten with no further preparation; ordinarily, however, a number of foods, breadfruit and taro in particular, are subjected to further preparation before being consumed. Breadfruit is most commonly pounded into a poi (<u>kȯnen mai</u>) following which it may be mixed with expressed coconut milk to make a dish termed <u>mwatyn</u>. The same techniques and terminology apply also to taro, cassava, bananas, and sweet potato, in that

it is possible to make kɔ̀nen ɔ̀ni, kɔ̀nen maniɔ̀c, kɔ̀nen uuc, etc., as well as the mwatyn of all of these. Cassava is practically always made into poi; the others less frequently. Preserved breadfruit (ɔ̈pwɔ̈t) is not pounded into poi but is frequently made into mwatyn. Frequently, cooked cassava is pounded together with bananas and/or sweet potatoes to make a mixed poi; it is stated that this is done to lessen the strong (bitter) taste of the cassava.

Pounding of vegetable foods into poi is done on a wooden mortar, or pounding block, (nyyf) using a coral pestle, usyys. The mortar is set up beside the earth oven or cook pot, the area immediately surrounding the mortar being carpeted with fresh banana leaves. Pieces of cooked breadfruit or cassava are removed a few at a time from oven or pot and transferred to the mortar. The pounding is slow and laborious at first, consisting more of a kneading than a pounding motion, as the fruit tends to be sticky. This difficulty is overcome by frequent applications of fresh water from a nearby container; the worker operates the pestle with his right hand and dips the left hand in the water container, removing it rapidly so that he can slap a bit of water on the base and on the fruit at the same time. The worker sits with legs spread on either side of the mortar, holding the pestle in the right hand with thumb and fingers around the neck. Pounding motions are approximately straight up and down becoming more rapid and forceful as the mass of fruit grows in size. Toward the completion of

pounding, the strokes may be delivered in a 4/4 rhythm, accenting the first stroke with a grunt or exclamation. The pounding is done over the slight depression in the face of the mortar, the greater part of the mass, or "loaf", of fruit being kept on the side of the depression nearest the worker. The left hand continually turns the mass in upon itself, i.e., toward worker, and frequently the mass is turned completely over, from inside out, i.e., away from the worker. Additional pieces of fruit are incorporated into the loaf until it becomes the size of a large coconut, with a consistancy like that of bread dough. The loaf is then set aside and another one started.

These loaves (enny, ruenny: one loaf, two loaves, etc.) may be wrapped singly in breadfruit leaves and eaten with no further preparation, or they may be made into mwatyn by putting a single loaf in a small wooden bowl (föyjene) or by putting anywhere up to one hundred loaves in the large ceremonial bowl, uunong. Ordinarily, only breadfruit poi is used to fill these larger bowls. If the loaves are to be made into mwatyn they are usually prepared by making a number of divisions in the loaf with the fingers, much as though one were cutting a pie; these divisions allow the coconut milk, which is expressed on the loaf, to penetrate to all parts of the loaf. An alternative technique is to add the milk first and then make the divisions. Mwatyn is customarily eaten soon after being made, although ordinary poi (kön) can be

eaten four or five days after preparation, and is, in fact, preferred if at least a day old.

Condiments and Special Dishes

The Trukese have never made much use of condiments. In former times some use was made of mwiik (Capsicum frutescens) which was pounded and eaten on fish, crabs, etc. Although salt is used today, largely as a preservative, it was apparently unknown in pre-contact times.[6] The predominately starchy diet, consisting mainly of fresh and preserved breadfruit, cassava, sweet potatoes, and taro, is relieved by the custom of eating these staples accompanied by a side dish of meat whenever possible. These side dishes are termed seni and may consist of fish, crab, shellfish, trepang, pig, chicken, wild birds, octopus, coconut meat (either whole or grated), orange, pineapple, or tinned meat. It is considered especially desirable to have some form of seni to accompany preserved breadfruit.

6. Informants stated that both the Germans and Japanese sold salt to the Trukese, but that the latter did not know how to make it for themselves until the last world war, when they learned to get salt by boiling sea water.

A kind of sauce was made formerly from a small sea animal, nikos, which was collected in large numbers on the

reef flats, pounded, and put into a half coconut shell with some sea water. This mixture was allowed to stand for about two days until slightly decomposed, mei pwȯno. Bits of breadfruit poi, whole baked breadfruit, or preserved breadfruit, were dipped in this sauce, termed etiy, before eating.

There is a great desire for fatty or greasy foods. The most desirable part of a baked turtle is considered to be immediately behind the front flippers, where the meat is particularly greasy. Formerly, expeditions were made to islands on the outer reef to fish for ää̈r and ruu, two species of fish thought to have particularly greasy intestines and liver. The contents of the intestines were removed and intestines and liver were rendered down on the spot in a tridacna shell placed over a fire. The fatty liquid thus obtained was carried to the home island in coconut shell flasks, pöör.

A special dish, considered very tasty, is called cöyc, and is customarily made only on the occasion of the annual breadfruit feast (umusamon) when a special point is made of giving some to the chief. It is made by grating coconut meat which is then allowed to stand in the house over night. It is placed in the sun the next day, at which time a second batch of coconut meat is grated and these gratings mixed with those of the first batch. To this mixture are added crushed leaves of sijȯjinen (Sida acuta), jötywöt (Wedelia biflora), and jenes (Piper betle), and this mixture

is then expressed on breadfruit poi. This dish may be made in large quantity in the form of fifty or more loaves of poi placed in a single large wooden bowl, in which case the whole is garnished on top with bananas and fish. As a final gesture, a few over-ripe breadfruit are placed on top of the dish.

In the process of making turmeric powder (teik) a whitish precipitate (jöpy) is obtained. This may be eaten without further preparation, or it may be mixed with grated coconut meat, wrapped in leaves, and baked in the earth oven; if prepared in this manner, it is termed cete taka.

Non-fermented palm toddy (äciar) may be used as a kind of sauce, and can be used on grated coconut, roasted breadfruit, and fresh breadfruit poi (but not on fermented breadfruit); leaves of ruke (Ipomoea gracilis, morning glory) may be pounded and eaten with a sauce of äciar. The leaves of jötik (Cassytha filiformis) may be eaten in a similar manner.

Today, at least, a clear coconut oil is obtained by prolonged boiling of expressed coconut milk in an iron pot. In the process of this boiling, a precipitate of small reddish pellets is obtained by straining the boiled liquid through coconut cloth or commercial cloth. This food is eaten sparingly, however, since it is thought to have a powerful cathartic effect.

Cooking and Eating Miscellany

Everyday cooking operations, as cooking breadfruit, taro, etc., and pounding into poi, and preparation of preserved breadfruit, were carried on by the husbands of an extended family working cooperatively in the cookhouse (fanang) of their wives' lineage. For special occasions, as the preparation of food for the annual breadfruit feast (umusómwon) the men of a lineage would gather at their own lineage fanang to prepare food. Today, due to the absence of large lineage houses, this pattern is perhaps less noticeable but nevertheless in operation. It is best seen in those cases where several women of a lineage are living matrilocally in adjacent households. For the present-day preparation of food for umusómwon the lineage males gather at the cookhouse of the eldest lineage female, this cookhouse then serving as the lineage fanang, or cookhouse.

Fresh poi and preserved breadfruit will last on the average three days, whereupon a new batch must be made; larger amounts are not made because of the excessive labor involved and also because the fresh poi will spoil if kept in the houses for a much longer period. Formerly, the day on which a particular extended family prepared food depended largely upon the amount of food on hand; with Christianity and Sunday as a day of rest, a pattern of cooking on Friday or Saturday, and again on Tuesday or Wednesday, gradually developed, and this pattern is reinforced today by the fact that Monday is devoted

to government work on roads, docks, etc. Minor cooking operations, as broiling an occasional fish or roasting a fresh breadfruit, are done more or less individually and at any time.

The main meal (fäf) is taken in the evening, and usually consists of a cold poi or mwatyn accompanied by a hot or cold seni, in the form of fish. A light meal (uunaw) usually cold, is consumed in the morning and occasionally a snack (eiiöpwos) is taken at 2:00 or 3:00 A.M., following fishing or other night operations. A great deal of sugar cane and an occasional coconut are consumed during the day. It is evident that most food is eaten cold although a seizable quantity of hot food is eaten informally during cooking operations. Cold food is never warmed over.

Poi, preserved breadfruit, and sometimes fish, are kept wrapped in leaf packages and the food is eaten with the fingers directly from the package, which is usually placed on the ground with the participants squatting or sitting around it. The mixture of poi and expressed coconut milk, known as mwatyn, is kept in a wooden bowl (more often today in a tin bowl) and is also eaten with the fingers. Men and women eat together, with the exception that a menstruating woman eats by herself apart from her fellows (in former times menstruating women ate in a special hut erected outside the lineage house).

Among the foods not customarily eaten by the Trukese

are the foot of the tridacna clam, the skate, the sting ray, and the shark. The plover, kuning, is not eaten, the reason being given that this bird feeds on land worms and grubs, which are unclean.

Although it has been reported previously that parts of an enemy slain in war were roasted and eaten, informants on Romonum Island denied this. A variant way of handling the dead in the old days was to wrap the corpse in mats and hang it up in the house. If the relatives were very fond of the deceased, they might eat a bit of the flesh and drink a little of the body juices which were caught in a wooden bowl placed beneath the corpse.

Beverages

Water A supply of drinking water is kept in every house. At the present time a converted gasoline drum is placed just outside the house so that it receives rainwater from the corrugated iron roof, or else water is carried from springs and kept in glass bottles. In former times, fresh water springs located on high ground inland constituted the chief source of supply and water was carried from these springs in coconut shell containers. In former times also, short breadfruit logs were occasionally dubbed out and placed beneath the eaves to catch rainwater.

Coconut water Fresh coconut water is enjoyed by young and old, particularly when working in the bush. The husks are removed on the husking stick (wȯt) and the end of the nut containing the two eyes cut off with the bush knife. After drinking the water, the nut is usually broken open and the tender meat scooped out with a sharp-edged piece of the husk which is removed by making a shallow, oblique cut near one end.

Palm toddy Palm toddy (ӓci) is used less extensively today than in former times. Unfermented toddy (ӓciar: ar, sweet) is seldom consumed at present, while the fermented variety (ӓcimwӓn: mwӓn, sour, fermented) is prohibited by the local chiefs on many of the islands. The ӓciar was commonly consumed soon after being collected and used as a sauce on grated coconut, fresh breadfruit poi, or roasted breadfruit. The leaves of Ipomoea gracilis (ruke) and Cassytha filiformis (jȯtik) were dipped into unfermented toddy before being eaten.

The fermented drink (ӓcimwӓn) is made by allowing fresh toddy to stand in a coconut flask container for a week or more without disturbing; the flask is stoppered loosely with a piece of wood. A bit of the fruit of Capsicum frutescens (mwiik) may be added in order to give the drink more of a tang. According to Romonum informants, the Trukese were unaware of the fermentation process until comparatively recently, when they learned it from Puluwat Islanders.

The toddy is obtained by tapping a young, unopened coconut spaeth (ettin ny). One end of a length of coconut fiber cord is tied about the base of the spaeth by a double knot, after which the line is continued toward the tip end of the spaeth, making a series of full turns about the spaeth on the way. These turns are made tight by first completing a three-quarter turn, putting the looped working end part way underneath the turn, tightening the standing line down on the loop, and then pulling the free end of the loop through the rest of the way underneath the standing line, after which it is continued on to the next turn. The tip end of the spaeth is removed by cutting around the outside, exposing the flowers inside. These are wrapped with a young palm leaflet from which the rib has been removed, after first cutting off the very tip end of the flower cluster. The coconut fiber cord binding is continued around this leaflet wrapping after which a piece of palm stipule is wrapped around the end of the spaeth and secured with more cord.

At this point the spaeth is tied to a lower branch by a length of coconut cord so that it bends downward slightly; this downward bend is increased gradually over a period of three or four days until the liquid begins to flow freely, after which the stipule wrapping is removed and a coconut shell flask is suspended from the end of the spaeth. A sort of funnel made from a coconut palm leaflet directs the flow of the toddy into the flask.

Narcotics

Tobacco Native tobacco (suupwa cuuk) was formerly grown in small patches near the houses but today, due to the importation of European cigarettes, it has declined in importance. Tobacco grown on Truk constituted an important item of trade with outlying low islands in former times and for this purpose it was dried and made into bundles or hanks (pöku). Three or four hundred green leaves were gathered at a time, wrapped in taro leaves, and left in the house for three or four days. The taro leaf wrapping was then thrown away and the tobacco leaves prepared for drying by stripping the leaf away on either side of the stem (acan). The resulting leaflets were tied in pairs to a hibiscus fiber cord and hung up in the house to dry. A hundred or more dried leaves were then made into a hank by stacking on a dry pandanus leaf. A second pandanus leaf was added to the top of the stack, and the whole dogged with coconut fiber cord.

For everyday use, dried tobacco leaves are carried around in a small package made by placing the tobacco on a portion of dry banana leaf, folding the leaf lengthwise several times, and tying an overhand knot in the middle. To make a cigarette, a triangular bit of the banana leaf is pulled from the wrapper; a bit of tobacco is shredded and placed on the larger end of the leaf, and the piece rolled diagonally.

HOUSING

Introduction

Structural styles Formerly on Truk there was one basic structural style which was used, with minor variations, for residential buildings (iim), canoe-meeting houses (wuut), cookinghouses (fanang), and menstrual houses, imwen irä. These various types of buildings differed in size, elaborateness of decoration and structure, and in certain minor structural features, but the basic plan of all was the same.

According to native thinking, all buildings divided into two grand catagories, based largely on materials and ornamentation, rather than structural details; those buildings constructed in the main with breadfruit timber, and including some wuut and iim, were termed tinimei or woomei, while cookhouses, menstrual houses, and the majority of wuut and iim, constructed indiscriminately with mangrove and other woods (including breadfruit) were termed woowön. The timbers used in the tinimei-type buildings were on the whole better worked, i.e., squared and rounded, than were those used in the woowön buildings. The former were characterized also by carved and decorated king posts and corner posts. The master house builder (souwiim) officiated only at the construction of tinimei-type buildings.

Types of buildings. Residential buildings (iim) were in the

main composed of large lineage houses, owned by the lineages but inhabited only by lineage women, accompanied by their husbands (jöös) living in matrilocal residence, plus children (the term imwei cöön is occasionally used for these large lineage houses). Having attained puberty, male children slept in the lineage wuut; adolescent girls slept in a special room within the lineage house and upon marriage each couple was given its own area or room within the house. In cases where the lineage house became overcrowded, one or more families might build a smaller house nearby or if overcrowding became a serious problem a new lineage house might be erected. These lineage houses were in general more numerous than the lineage wuut, most lineages of any size possessing a house, whereas several lineages might share the facilities of a single wuut. In size, the iim approximated the wuut, although many iim were larger than the average wuut.

The most important non-residential building (wuut) was owned by the lineage, the chiefly lineage of a district almost always having one. Ownership of a wuut by other lineages within the district depended largely on the size of the lineage; if a lineage did not possess an wuut it used that of the chiefly lineage or of some other lineage which did possess one.[1]

1. For a partial census of lineages, lineage houses, and wuut on the islands of Truk, see Goodenough (Mss., 1949).

The wuut was variously used as a canoe house, a meeting place, a place where economic or ceremonial functions were carried on to the exclusion of either one sex, and as a sleeping place for adolescent boys, for men observing sexual taboos, and male guests for other islands. Apparently women did not sleep in the wuut, although they were allowed to enter freely for meetings, and at other times, providing only their husbands were present.

Large wuuts located near the shore served as canoe houses (wuutten wa) and also as meeting houses (wuutten mwiic) providing the bulk of the lineage population was located conveniently nearby. If the bulk of the lineage was located at some distance inland, a second wuut, usually smaller, might be erected and used as an wuutten mwiic. Here lineage or district meetings were held, as the annual breadfruit feast and ceremony (umusɔmwon) which was held in the wuut of the chiefly lineage of the district. In cases where two separate buildings were erected, males of the owning lineage and of participating lineages slept in either building depending upon the circumstances; if war threatened, for instance, they slept in the wuutten wa, near the shore, in order to be on the lookout for surprise raids.

Most lineages owned a cookhouse (fanang) although this was not always true, some of the smaller lineages often sharing the fanang of a more prosperous lineage. In order to carry on those cooking operations requiring the use of

water, the fanang was located near a fresh water spring if possible, which sometimes necessitated the location of the fanang at some distance from the lineage house. The fanang consisted of a small open shelter built along the same basic lines as the wuut and iim, under which were one or more earth ovens plus various cooking utensils.

A menstrual house (imwen irä) was located in the vicinity of most lineage houses and was used by the women of those houses during the menses and also during childbirth. These buildings are no longer in evidence, but are stated to have been built along the same lines as the wuut and iim, although on a less elaborate scale.

All buildings were built directly on the ground, no use being made of stone or wood foundations.[2] There was no preparation of the ground in any way, and after completion of the building, palm fronds and old mats were spread over it to make a kind of flooring. The same is true of present day buildings of aboriginal style although many houses are at present constructed of sawn timber along Japanese structural

2. Kramer (1932: 223) makes the statement that raised floors with hard logs were more frequent in the past, and says that he could still see some of them. His illustrations however, contain no such evidence, and informants today deny that any flooring of logs was ever used on Truk.

lines, in which case the buildings are raised above the ground on short wooden posts.

Information obtained today on various islands of Truk regarding the larger wuut and iim indicates that the larger and more important timbers used in these buildings are often of relatively great age, having been taken in many cases from structures which no longer exist. There is thus indicated a pattern whereby the larger timbers continue in use over and over again although particular buildings may be demolished, moved, or rebuilt. In many cases a partial history of the larger timbers (in particular those which have been decorated by carving or incising) can be recounted and often the original artisan is remembered.

Orientation Correct orientation was considered an essential part of building operations, and all meeting houses and lineage houses were oriented E-W. This same pattern is observed today in the case of meeting houses; those houses which today are built along aboriginal lines also tend to have the old orientation, but the more modern dwellings of sawn timber are oriented indiscriminately according to convenience.

Size of buildings An old method of referring to the size of buildings is still in use today. By this method a vertical row of roof thatching is taken as the unit of measurement,

one such row being designated by the same term as that used for finger, ayt; thus a building with five rows of thatching on one side of the roof is referred to by the term for finger to which is prefixed the word for five, nimayt.[3] Bollig (1927: 187-88) maintains that buildings were bought and sold according to the number of rows of thatch sheets, but is evidently referring to transactions carried on after German occupation and with German currency; informants deny that this conception

3. The wuut in the village of Corong, Romonum Island, has six rows of thatching on a side and is thus termed ónayt; the main part of this building, i.e., the area contained within the four main corner posts, is 29 ft. long by 17 ft. wide. Practically identical measurements with the same terminology were obtained for the Faaija village wuut on Fanapenges Island. Since a thatch sheet averages 5 ft. in length, the dimensions of buildings with more or less than six rows of thatching vary accordingly; thus the wuut in Neemöwyr village, Fanapenges, is 17 ft. long by 11 ft. wide and is termed faayt, or "four fingers". The Petia village wuut on Udot is 34 ft. long by 20 ft. wide and is termed fyyayt, "seven fingers".

Informants state that both wuut and iim, in the old days, averaged five or six rows in length, and never more than ten rows, or a maximum length of 50 ft.

ever entered into exchange transactions on a purely native level. This conception was used, however, as a basis on which were built a number of sets of ideal measurements for buildings of varying size, i.e., according to whether a building was to be nimayt, five thatch sheet rows long, or önayt, six rows long, there were corresponding measurements for the main timbers to be used in the building in each case.[4]

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4. The following sample measurements were obtained from Simiron, one of the few master house builders left on Romonum. End plates, wall plates, and rafters are measured in ngaaf, equal to the distance between the fingertips of the outspread arms. The king posts are measured according to the number of turns made with a line around the width of the extended fingers of one hand, this measurement being termed öppiöpun. The corner posts are measured according to points on the human body as it stands upright, as loins, kywanitö; belly, unupwösic; chest, unupwönap; shoulders, faairo (under the thatching); top of head, aseiiro (over the thatching); about one foot above the head, usaan; about two feet above the head, useiisam.

   For a building, either wuut or iim, with a length equal to five vertical rows of roof thatch sheets, termed nimayt, the following dimensions of main timbers are required: end plate, 2 1/2 ngaaf; wall plate, 4 1/2 ngaaf; rafters, 2 1/2 ngaaf; king post, five turns,

ŏppiŏpun; corner posts, as high as belly, unupwŏsic. For a building six thatch rows long, ŏnayt, the following dimensions are required: end plate, 3 ngaaf; wall plate, 5 ngaaf; rafters, 3 ngaaf; king post, six turns, ŏppiŏpun; corner posts, as high as chest, unupwŏnap.

Informant states that it is desirable that the end plates and rafters be of the same length.

Kramer (1932: 223-24) states that the size of buildings are determined by the length of the end plates and gives a series of measurements, all named, stating that some were considered good and some bad. Informants on Romonum deny that the end plate was ever considered the sole factor in determining the size of a building, and it is possible that Kramer's information constitutes only a part of the total picture, wherein the number of thatch sheet rows determines the set of measurements to be used. The dimensions within each set may in turn be determined by the length of the end plate, however.

Situation today Attempts by the Japanese to reconstitute the nuclear family as the basic unit to occupy a house probably contributed towards the disappearance of the old lineage houses. The trend was also probably furthered by an increasing number of patrilocal marriages, whereby a man built and occupied his own house, as well as increasing

economic independence and freedom from warfare (and thus need for collective security) due to Japanese occupation. Whatever the cause or causes, it is practically impossible to find a lineage house of the old type functioning today.[5]

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5. The only functioning lineage house found on Truk was that in the village of Jepin, Pata Island, where approximately seven lineage women form the basis of a matrilocal extended family.

The present pattern is for a few lineage women to form an extended family in a single house or, more commonly, in adjoining houses. Dwelling houses at present are thus comparatively small.

Less than half of the houses on Truk are built directly on the ground according to aboriginal structural style, using native materials. On a few of the eastern islands within the lagoon the old style house has virtually disappeared; for example, a survey of Uman Island failed to disclose a single aboriginal-type dwelling house. The more popular houses today are those constructed by native carpenters who were either apprenticed to Japanese carpenters or who picked up some skill by watching them. These houses are constructed largely with odds and ends of sawn timber and corrugated iron steets for roofing.[6] They are raised above

6. It is probable that most of these modern style houses were constructed toward the end of the recent war when the Trukese were able to dismantle many of the houses formerly occupied by the Japanese. A survey of modern style houses on Romonum reveals that 60% of these houses were built in 1945 or thereafter and that none was built before 1940. These figures should not be taken too literally, however, since informants maintain that until the outbreak of the war the native population on Romonum was located inland and thus the houses were erected in their present location only recently. It is thus probable that some proportion of native houses was built along modern lines prior to the present decade. Bollig (1927: 192), reporting about 1910, mentions the presence of a few such houses, giving the same term, imwen serä, as that in use today.

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the ground on short wooden posts and have wooden flooring and glass windows whenever obtainable. The method of construction, making use of floor joists, mortising techniques, nails, etc., was learned in large part from the Japanese. As nearly as can be ascertained, the old-style dwelling houses, meeting houses, and cookhouses, which are in use today are constructed practically in the same way, and largely with

the same materials, as those in pre-contact times.

Basic Structural Style[7]

7. The description of the basic structural style of native buildings given here is a composite one, taken from observation of numerous buildings in existance today as well as descriptions and illustrations found in the literature on Truk. With certain modifications, which are indicated in the text, this description can apply to dwelling units (iim) meeting houses (wuut) and cookhouses (fanang) whether constructed in recent times or in pre-contact times.

The average Trukese building consists in the main of a central rectangular structure with two end extensions and two side extensions (fig. 60). The roofing on the two end extensions is independent of the main roof and is supported on its own rafters, while that on the side extensions is formed by projections of the main roof beyond the main structure wall plates. Between the extensions, on all four corners, are diagonal corner areas which in all iim and some wuut are roofed over, in which case independent sets of rafters are used. Buildings used as dwelling units (iim) are usually permanently walled on all four sides and an opening left in one or both ends as a door. If an wuut is to be used as a sleeping place for men for any length of time, temporary

walls of coconut palm leaf matting and palm fronds are erected, at least on the sides exposed to the wind; otherwise, wuut are usually open on all four sides and corners.

Main structure The main structure is supported by four large corner posts (wyr)[8] which are sunk into the ground to a depth of 2 to 6 ft. These posts have in most cases expanded heads through which are cut cresent-shaped notches, into which are set the wall plates. The shafts of these posts are most commonly round, but occasionally they are cut roughly to a square or octagon shape. The wall plates (tito) in all cases project a foot or more beyond the main corner posts. These plates, in the form of single beams, are round and taper slightly from the middle section toward either end, where they are flared to the original diameter. The outside ends of the wall plates are in some cases slightly concave. The plates rest in notches cut into the heads of the corner posts, the top surface of the plate rising just above the top of the post in all cases. The wall plates are not lashed to the corner posts in any way. The end plates

8. According to Kramer (1932: 225) a large basaltic stone is first placed in the bottom of the post hole, and the corner post then rests on this stone, presumably to prevent gradual sinking of the post into the soft sand.

(ŏycam) in turn rest on the wall plates, these junctions being made directly above the corner posts in all cases. These end plates are made in the form of single beams, squared, and beveled at the ends to accommodate the slope of the roof. (See fig. 61). The end plates are lashed to the wall plates underneath with cross-bound lashing, (fig. 62). In a few of the larger buildings, a wall post (wyr nuk) is added in the center of either longitudinal side of the main structure; these posts are made in the same way as the main corner posts and are utilized in the same way to support the wall plates. In such cases there is added a transverse center plate (ŏycam nuk) which rests on the wall plates directly over the wall posts. A king post (pwŏŏt or uratŏ) rests on the center of either end plate and also on the center plate if present, and serves to support the ridgepole. The king posts are not fastened in any way either to end plates or to ridgepole, but are held in place by a series of counter thrusts working from all directions. This situation is attained by erecting the building in such a way that the ridgepole and king posts may be supported in place by a forked pole arrangement at either end until the rafters are lashed to wall plates and ridgepole, after which the supports are removed and the thrust of rafters on either side then prevents sideward movement of the king posts. To prevent backward and forward movement, the rafters toward either end are set in at increasingly greater angles so that they

constitute a thrust working from either end toward the middle of the structure.

The king posts in the larger structures, and especially those in tinimei-type buildings, are decorated by carving and painting. These decorated king posts are made only by the master house builder (souwiim) and are actually the only beams for a new building which he makes himself, although he prescribes correct measurements for all the important beams, and officiates in other ways at the erection of a new building.

The ridgepole (wung) is a single squared beam on which rest the rafters. In some cases the top most edges are beveled to accomodate the slope of the rafters, while the under surface may be beveled on either side slightly to better allow for ornamental sennit lashing. The ridgepole projects a foot or more beyond either king post.

End rafters (wɔ̀ɔ̀umas) are generally undifferentiated in size from other principle rafters, (woo), all rafters being single squared beams. In some cases the end rafters meet at the top beyond the ridgepole and do not rest on it; in these cases the ends of the two beams are notched so that they interlock and support their own weight (fig. 63). More often they rest on the portion of the ridgepole extending beyond the king posts and are arranged in the same manner as the other principle rafters. By this arrangement, opposing rafters do not join above the ridgepole but, by allowing

a few inches distance between them, a sort of fork is formed by the two ends projecting above the ridgepole. (Fig. 64). These forked pairs of opposing rafters are in turn spaced 1 ft. or more apart so that a sort of cradle, running the length of the main structure, is formed in which is placed the secondary ridgepole, kuning. All rafters are lashed to the ridgepole by cross-bound lashing (fig. 65). Rafters are thus supported on one end by the ridgepole, and run from there to the wall plates, where they are lashed again with cross-bound lashing. All rafters extend some distance beyond the wall plate thus forming the roof of the side extensions (fäneppuk). They are lashed at their outside ends to a side extension wall plate which in turn rests on small diameter wall posts. Occasionally, the end rafters run directly to the side extension wall plate, coming down outside the ends of the main structure wall plates.

A system of stringers (ääpengis) is usually attached to the underside of both sides of the main-structure roof. These stringers are often unworked poles but in the larger tinimei-type buildings they may be squared timbers. They are diagonally-lashed to all principle rafters which they intersect. The pattern of arrangement varies from a single long stringer running longitudinally half way between ridge-pole and wall plate, to a combination of this stringer with diagonal stringers running from lower corners of the roof and either joining together with the longitudinal

stringer at a middle point on the latter, or joining it independently some distance apart. (See figs. 66, 67).

Roof thatch sheets are lashed directly to end rafters and principle rafters, no use being made of purlins or thatch rafters. Eave purlins (epyyk) consisting of reeds laid end to end and lashed to rafters a few inches in from their ends, are utilized, however. Kubary, (1895: 50 and plate VIII, fig. 1 and 2), who was on Truk in 1878-9, does mention both purlins and thatch rafters, however, and gives an illustration, all from a description of an wuut in the village of Sopore on the Island of Fefan: "The ends of the rafters crossing each other above the upper roof beam (ridge-pole) are fastened at their forks by means of a round piece of wood, the rafters themselves bear on each side (of the roof) five longitudinal laths (purlins), apegec, which are also square-cut and to which the outer rafters, tarin, are fastened, one between each pair of eyiida's (principle rafters). To these, finally, are attached the leaf shingles made of epi leaves sewn together." Kramer (1932: 219) mentions what is apparently the same thing, but says that such an arrangement is rare on Truk.

The gable ends (neeru) framed by the end plates and end rafters, are ordinarily closed up by a framework of hibiscus pole stringers to which thatch sheets are attached. These stringers consist of a number of vertical poles spaced on an average of one foot apart, resting on the end plates and

lashed at the top to the outside of the end rafters. There may be in addition one or two horizontal stringers lashed to the vertical poles. (Fig. 68). Thatch sheets are attached individually to these stringers, and can be arranged in a number of ways, (fig. 69). The ends of the main structure roof project an average of five inches beyond the gable ends.

End extensions The two end extensions (siis) are structurally more or less independent of the main part of the building. The rafters forming the sloping roof of these extensions are supported on the inner side by a secondary end plate (monoufö̈y) which is of the same length but smaller, and not as well worked as the main end plate. It is placed adjacent to the main end plate, and is freely supported at either end by the ends of the main structure wall plates which project beyond the corner posts. Since the secondary end plate is of small diameter, the end extension rafters, when resting on it, butt directly against the main structure end plate with their top surfaces practically level with that of the main end plate. On the outside, these rafters are lashed to a small wall plate of same length as the secondary end plate, which in turn rests on two wall posts, or corner posts. Depending on the size of the building and the care expended on it, the beams used in the end extension may be unworked poles or squared timbers; occasionally the end extension corner posts are smaller copies of the main structure

corner posts, with notched heads, octagonal shafts, etc., but more often they are merely unworked poles. Tatch sheets are attached to the end extension rafters in the same way as for the main structure.

In those cases in which the main end rafters meet beyond the ridgepole, the gable end stringers, instead of resting on the main end plates, rest instead on the roof of the end extension, thus forming an inclosed shelf a foot or more wide, composed of the main end plate together with a portion of the end extension roof. This shelf is utilized for the storage of various articles, as fishing equipment, etc.

Corner extensions The corner areas on dwelling units, between side and end extensions, are roofed over and walled. This roofing is supported on an independent set of rafters which may be arranged in several ways. In all cases a plate is run from the top of one end extension corner post to the top of the adjacent side extension corner post. Three or more rafters are then lashed to this plate, extending fanwise to the nearby main structure end rafter and end extension rafter, where they are lashed with diagonal lashing. Or an additional plate may be run from main structure end rafter to end extension rafter and the diagonal rafters then lashed fanwise to both plates. (Fig. 70). Thatch sheets are then tied individually to these rafters, in patterns similar to

to those used for gable thatching.

Kramer (1932: 220) mentions the presence of a hip roof, whereby fan-shaped end extension roofs rise directly to the peak of the main structure gable ends, giving the ends of the buildings a rounded appearance. He illustrates this for an wuut (plate 26d) and for an iim (fig. 178, p. 222). Roofs of this type were not observed on Truk today.

Walls Dwelling units commonly have permanent walls on all four sides and corners as well as enclosed gable ends. This situation seems to have obtained in former times as well. The wuut type of building, on the other hand, is usually open all around, including gable ends. If an wuut is to be used for sleeping purposes, however, the sides and sometimes the ends and corners are enclosed, the walls in this case being of a less permanent construction that those found on iim.

In addition, the larger lineage houses seem formerly to have been divided on the inside into a series of rooms (ɑseing) although this was not always done. These rooms were located along the sides, underneath the side extensions, thus leaving the inner part of the main structure, as well as the area under the end extensions, free for minor cooking operations, etc.[9]

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9. Informant Kekkin gave the following information concerning his lineage house as it existed in the old

days: The house, located inland on high ground, had a length equal to seven vertical rows of thatch sheets (whereby the main structure had a length of approximately 35 feet). Eight women of his lineage formed the nucleus of the extended matrilocal family which occupied this house. Each woman had her own room, located beneath one of the side extensions. The children of each woman lived in her room with her until about the age of puberty, when the boys began sleeping in the lineage wuut, located nearby. After reaching puberty, or soon thereafter, the daughters of all the women began sleeping in a special room, but still in the same building with their mothers. Upon marriage, each daughter received a room of her own in the house (this custom apparently led in some cases to overcrowding of the lineage house, in which case separate households were established nearby in smaller houses, or if overcrowding was serious, the lineage might split up, and a second lineage house be erected). The jös, husbands of these lineage women, slept with their wives in the lineage house, providing they were not observing any sexual taboos, as in preparation for war, canoe making, turmeric making, certain kinds of fishing, etc. During such periods they slept usually in the wuut of their respective lineages.

The central part of the lineage house (the area marked off by the four main corner posts) was kept free, and used for minor cooking operations, working, sitting, etc. The rooms were under the side extensions, with their inner walls fastened at the top to the main structure wall plates. Each room had a door i.e., an opening, leading into the central part of the structure. Informant estimated that one such room might measure 10 by 15 feet. Each room had a mosquito net, toonóm, capable of sleeping three or four persons, and each room was equipped with a wooden chest, sop, for storage of valuables. A raised sleeping platform, póó, of adze-hewn breadfruit boards might also constitute a part of the furnishings of a room.

A small room was sometimes walled off at the end of an wuut belonging to the lineage of a district chief, for use by the chief when sleeping in the wuut. The buildings observed on Truk today lack any such division into inner rooms.

Walls are constructed in one of two ways. The most common, and the one observed on buildings today, makes use of a rough framework of skinned hibiscus poles.[10] The framework

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10. These poles are often obtained as a by-product of

removing the bast fiber. The outer bark is first scraped off and the poles then soaked in the sea for a week or more after which the bast fibers can be pulled off leaving a skinned pole which is allowed to dry and subsequently used for a variety of purposes, including house buildings.

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is composed of a series of upright poles (etiip) which are lashed to the outside side of the outer plates of side, end, and corner extensions, and rest at their other ends on the ground. (Fig. 71). They are placed an average of 1 ft. apart. Two or three horizontal stringers (ääpengis) are then lashed, at intervals of 1 ft. or more, to the uprights. All lashing is diagonal. Overlapping rows of thatch sheets are tied to this framework, each sheet being tied individually. The bottom row of sheets is usually placed upside down, i.e., with the leaves pointing upward, and lying against the inside side of the sheet next above. This technique may be used for inner room walls as well as outer house walls.

The second technique, no longer observed today and apparently rarely used in the old days, is termed nuutti. By this technique uprights (etiip) are used in the same way as described above, but spaced at greater intervals. The wall is then built up by utilizing skinned hibiscus poles instead of thatch sheets, the poles being laid horizontally side by side beginning from the ground and working up to the

eaves. The horizontals are lashed to the verticals with a continuous line of sennit. A slip knot is first tied in the end of the line, around the bottom of one of the verticals; the horizontal is placed in position, the line passed over top of it, on the side nearest worker, and then given a full turn around the vertical. The working end of the line is then given a quarter turn around the standing part of the line and the turn pulled down tight against the upper edge of the horizontal. The next horizontal is added, the process repeated, etc. Where such walls serve as outer walls, thatch sheets are added.

Corner sections, as observed on both wuut and iim today, are usually walled by attaching the uprights to the outer corner plate, so that the walls of the buildings follow the contour of the outer plates of all extensions. A variation, however, consists in eliminating the diagonal corner roofs, and thus the outer corner plates, and instead walling up the ends of the end extensions and side extensions, continuing the walls up to end and side extension roofs.

A method whereby the ends of a house were walled up with adze-hewn breadfruit wood planks (paappen cuuk) was apparently known on Truk.[11] The planks, in the form of a

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11. This information was obtained from only one informant, Kekkin. Walls of this type are not in evidence on Truk today, and are not mentioned in the literature on Truk. Kramer (1935, Vol. 1: 145) does mention

something of this sort for Nama and gives illustrations (plate 13c and fig. 70, page 144). According to informant, this plank arrangement was used as a protection against burglary.

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series of adjoining uprights, were set along the long sides of both end extensions, being lashed at the top to the outer end extension plates. To secure these uprights at the bottom, a squared timber (picé) was placed on the ground, running between both end extension wall posts and lashed at either end to them. A longitudinal groove (écein) was cut into the upper surface of this timber, and the upright planks then fitted into the groove, making the wall practically immovable. A plank door (pinepin) was usually used in conjunction with walls of this type (the word for an opening without a door is asam). This door, consisting of a single plank of breadfruit wood, was cut with a projecting knob in the center of the inside side. A transverse hole was bored in this projection and holes bored in adjacent wall planks at a corresponding height. An orange wood pole was then fitted into these holes, enabling the inhabitants to effectively bar the door from the inside.

Ordinarily, doorways are merely openings in the wall, usually in the center of either end of the building, sometimes equipped with squared door posts set on the ground and lashed at the top to the extension plate.

Thatched Sheets

The Trukese utilize the leaf of the ivory nut palm (Coelococcus amicarum), which they call rypwyng, to make thatch sheets for use in roofing and wall construction. Binding rods, around which individual leaflets are wrapped, are made from a kind of reed, woowo or rōō. Tie lines, for securing leaflets around binding rods, may be made from a tall swamp grass, jäsät (Miscanthus floridulus), or more often, lengths of palm leaflet midrib are used. All of these materials are used soon after being collected and are therefore green and pliable. The ivory nut palm leaflets are cut only from the center part of each frond so that they are all of approximately equal length and thickness.

Two binding rods, averaging 5 ft. long and 1/2 in. in diameter, are placed across the right thigh as the worker sits, the rods being arranged side by side, with the butt end of one adjacent to the tip end of the other. Leaflets are wrapped beginning at the end of the rod on the worker's left, with the ends of the leaflets pointing toward the worker; wrapping and tying proceed from left to right as the worker faces. The leaflets on either end of the sheet are folded inward along the line of the leaflet rib and the fold creased flat between the fingers; the rest of the leaflets are left flat. All leaflets, before being wrapped on the binding rods, are bent transversely at a point about

two thirds of the distance from one end, and worked back and forth a few times to fix the bend. The leaflets are wrapped with the short ends uppermost. The leaflets are wrapped a half turn around the binding rods in such a way that a leaflet overlaps about half of the preceeding leaflet. They are secured with a tie line which is used in lengths of approximately 3 ft., new elements being tied in at intervals when needed. The tie line runs parallel to the binding rods at an average distance of one inch, (fig. 72). The tying technique does not utilize a needle or punch, the worker relying on the natural stiffness of the tie line material.

After the first two leaflets have been wrapped, the working end of the tie line is forced downward through the upper half of # 2 leaf on the left side of the leaflet rib as the worker faces. The line engages # 1 leaflet on the way, and comes out through the lower half of # 2 leaflet still on the left side of the rib. The line is given a half turn around the rib and forced upward again, but this time diagonally to the left so that it comes out on the original side of the rib but not through the original hole. (See fig. 73). The working end of the line is next passed to the left, crossing the standing line on the way, and is given a half turn around # 1 leaflet and is brought up again through the hole in # 2 leaflet; the turn around the end leaflet is tightened down, the standing end of the line is cut off short so that it lies snugly under the working end, and the line

can now be passed to the right, preparatory to tying # 3 leaflet. This leaflet is wrapped and tied in the same way, except that the line is not given a half turn back over the preceeding leaflet as is the case when beginning a thatch sheet.

Tying thatch sheets in this way is called tik rypwyng. The rest of the leaflets, averaging thirty odd in number, are wrapped and tied in the same way with the exception of the last two leaflets to be wrapped. These are arranged similarly to the first two leaflets, with the end leaflet (#33) folded lengthwise. The next-to-last leaflet (#32) is tied in the normal way, the line is given a half turn around the end leaflet and brought up through the last hole to be made in #32. The working end of the line is secured by making two full twists underneath the standing line, once where it crosses between leaflets 31 and 32, and once between leaflets 31 and 30.

A single tie line is frequently not long enough to complete a sheet, in which case a new line is incorporated. (See fig. 74). The working end of the new line (B) is forced through a leaflet and up again, paralleling the holes made by the old line (A). The new line is then pulled through the holes for its entire length leaving about 5 in. of the standing end free. This is given a half turn around the old line where it crosses between two of the leaflets, and the working end of the old line bent back a half turn and

passed through the turn made in the new line. The standing end of the new line is pulled down tight on this bend and the work can proceed.

Thatching a Roof[12]

12. The material contained in this section was obtained by observing the only occurrence of roof thatching during the entire field work. This instance may not be typical since it formed part of the construction of a modern-style building, where a layer of thatch sheets was put down beneath a layer of corrugated iron sheets in order to make the roof more rain resistant. In this instance, a ridge capping of corrugated iron was used, the thatch sheets continuing up only as far as the ridgepole.

As observed on all buildings on Truk, thatch sheets are tied directly to principle rafters, including end rafters, no use being made of purlins or thatch rafters. When possible, sheets are tied to two rafters, a rafter running underneath either end of the sheet. Thatching is done by a team of men, including thatchers, one or two men who hand sheets to thatchers, and one to several men who direct the placement of sheets from the ground, so that the horizontal rows of sheets will form straight lines, thus making a pleasing appearance when

completed. As observed on Romonum, the thatchers work from inside the building, standing on scaffolding when necessary. Each man is responsible for tying a vertical row of sheets, beginning at the bottom eaves and working up to the ridge-pole. The men attempt to work abreast so that the alignment of horizontal rows of sheets may be checked by those on the ground. A helper, or helpers, supplies new sheets to the thatcher on one end, who in turn passes them down the line; when a thatcher needs a new sheet he calls: "emen" or "emen rypwyng". Tying sheets to rafters is termed ketós.

In tying the sheets, a continuous line of coconut fiber cord is used for each rafter, so that each thatcher is responsible for two lines. The first, or bottom sheet, is tied by inserting the line just below the binding rod. As observed on Romonum, the line is inserted by making a hole in the sheet with the finger. Kramer (1932: 220) illustrates a "roofing needle", Dachnadel, in conjunction with a description of making thatch sheets, but does not specify its use. The working end of the line is given a full turn (to the left as the worker faces outward from inside the building) around the rafter underneath. The turn is made in such a way that the line comes up on the outside of the binding rod and thus passes over it before the line is secured with a square knot, directly over the rafter. (See fig. 75). This procedure is duplicated on the other end of the sheet.

The second row sheet is then placed in position,

overlapping the first row sheet for about one third of its width. The line is continued up the rafter in the direction of the worker, making a quarter turn on the way so that it lies along the left side of the rafter. It is brought up just beyond the binding rod of #2 sheet, where it is held against the side of the rafter with one hand while the working end is given a diagonal quarter turn to the right, up and over the binding rod, down through a hole in the sheet and back under the rafter, meeting the standing end of the line where the hand is holding it. (See fig. 76). The working end is then given a quarter turn underneath the standing line and is continued up the rafter in the direction of the worker. This procedure is duplicated for all except the last sheet, which is tied to the ridgepole and the line secured with a square knot. A variation is to pass the working end of the line over the ridgepole and around the corresponding rafter on the opposite side, pulling it up snug against the ridgepole, after which the line is secured with a square knot.

The sheets in two adjacent vertical lines overlap only slightly and do not meet over a rafter (fig. 77). They are secured together by putting a short length of coconut fiber cord through the overlapping portion of both sheets, giving it a full turn around the binding rods and securing on the topside with an overhand knot.

Bottom sheets are supported by an eave purlin

consisting of reeds laid end to end and lashed at intervals to the principle rafters. Occasionally an edging of reeds is attached to thatch sheets at one or both ends of a roof. This is done by tying a series of reeds, placed end to end, to the edges of the sheets where they lay flush with the outside side of the end rafter. The tying is done with a continuous line of coconut fiber cord, the cord passing in each case diagonally over the binding rod, through a hole in the sheet, and up under the reed, whereupon a quarter turn is made in the standing line, and the working end continued along the length of the reed to the next sheet.

Where a pleasing appearance is desired, the projecting leaves of the bottom row of sheets are cut off even with the eave purlin, but ordinarily they are left to hang down against the wall sheets, thus affording a better protection against rain and wind. Coconut palm fronds are usually placed on top of the thatching in order to prevent the wind from loosening individual thatch sheets.

Thatch sheets used to cover walls and gable ends are made in the same way as roof sheets, but are usually tied individually to a framework of hibiscus poles. They are tied with separate lines at either end, the line passing diagonally around binding rod and hibiscus pole, and secured topside with an overhand knot.

Ridge Capping

The area over the ridgepole requires special treatment in order to make it waterproof. This is accomplished by utilizing special capping thatch sheets (pwönitiu). These sheets are made in much the same way as ordinary thatch sheets, except that a second binding rod is added, the result being two rods, running along both longitudinal edges of the sheet. These sheets are the same length and width as ordinary sheets.

The pwönitiu sheets are laid along the length of the roof, overlying the secondary ridgepole, kuning. They are secured in place by forcing short mangrove wood sticks transversely through each sheet, such that the sticks come below the secondary ridgepole but above the thatch sheet binding rods. (See fig. 78).

Erecting a Building

The erection of a building begins first with the assemblage of all timbers to be used in the main structure.[13]

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13. Information in this section had to be obtained from descriptions by informants since it proved impossible to witness the erection of a native-style house on Romonum or surrounding islands.

Each timber has been cut and shaped at the spot where the

tree was felled.[14]

14. Large timbers and other heavy weights are transported by a pole and sling arrangement. The burden is slung on a number of coconut fiber ropes, the ends of which are attached to a number of poles. The poles are then carried on the shoulder, two men to a pole.

In order that the building may assume the correct shape and proportions, the master house builder (souwiim) makes a series of measurements and readjustments, both before the building is begun and during construction. First the wall and end plates are laid in the same relative position on the ground which they will assume in the completed building. In order to ensure that all corners of this frame will be right angle corners, the souwiim stretches a line of coconut fiber cord diagonally the length of the frame, from one corner to the other, and the timbers are readjusted until the same measure obtains between the remaining two corners. The correct position of end plates on wall plates is then marked on the latter with red paint so that the same relative position can be reduplicated during construction. The souwiim also makes preliminary inspection of corner posts, roof stringers, rafters, king post, and ridgepole, making sure that they conform to the ideal set of measurements for the size of the particular building contemplated.

The corner posts are next set into holes already prepared, the wall plates set into place on the corner posts, and the end plates lashed in place on the wall plates.

Since the king posts and ridgepole are kept in place by utilizing the equal thrust of rafters on either side, a problem is involved in holding the ridgepole in place on the king posts until the rafters can be lashed to ridgepole and wall plates. This is accomplished by first placing the ridgepole lengthwise across the two end plates. Two sets of two long poles (aramas) each are used to raise the ridgepole to its proper height and to hold it there while the king posts are inserted beneath it and rafters are lashed to it. The two poles in either set are crossed at one end and lashed so that they form a shallow fork, these forks then being applied beneath the ridgepole at either end and the pole thus raised to position. Several men hold the aramas steady, while others steady the ridgepole further by pulling on guy ropes previously attached to the pole. The king posts are inserted next; their position in the center of the end plates has already been marked on the latter by the souwiim, utilizing a line which is stretched the length of the end plate, and doubled to arrive at a center point. Several men climb on the ridgepole and lash rafters in place while others lash the opposite ends of rafters to wall plates. The souwiim directs the placing of rafters. When all rafters are in place, the supporting poles (aramas) are removed, and the

framework of the main structure is completed. This concludes the work of the souwiim as far as measuring is concerned, the end extensions, stringers, and thatching being added without his help.

Informants state that by utilizing lineage labor, the construction of a large building, including time spent on ornamental lashing, thatching, etc., may occupy as much as a week, not counting time spent in preliminary cutting and shaping of timbers. A small house can be put up in a day or so.

House Furnishings

The earthen floors of dwelling units are covered with a layer of coconut palm fronds which is renewed periodically. According to some informants, layers of fronds were allowed to accumulate in the old days to form a thick carpet. Worn-out sleeping mats of plaited pandanus leaves are sometimes placed on top of the fronds. Meeting houses and canoe houses ordinarily have no covering on the floor.

Plaited pandanus leaf sleeping mats are spread on the floor or on a sleeping platform when in use, and at other times are kept rolled up in a corner on a box or board, or else on the platform.

The Trukese have made use of the introduced tree, kòton (Ceiba pentandra), using the white floss around the seeds as stuffing for pillows. The floss is contained in a

pillow slip made from imported cloth. Formerly a kind of pillow, or head rest, was made from pieces of a light, soft wood (äpen) which are occasionally washed up on the beach.

From early times, apparently, the Trukese have made use of a raised wooden platform or bench (pȯ) for sleeping. In 1838 Dumont d'Urville reported the use of such platforms. Today, they are found in many native-style houses. They are made with thick longitudinal planks of adze-hewn breadfruit wood supported on two transverse end planks. These two planks in turn are supported an average 1 1/2 ft. above the ground by four roughly-squared posts averaging 6 in. in diameter. The platforms in use today are all made to accommodate two or more persons, being on the average about 6 ft. square. A narrow bench, observed on the island of Fanapenges, was stated to have been formerly used as a sleeping place. This piece, also termed pȯ, was made from a single breadfruit log and stood 8 in. above the ground. Informants stated that this bench was made to accommodate one person and that such benches were never made any wider, i.e., for more than one occupant.

A kind of mosquito net (toonȯm)[15] was woven on the

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15. The word, toonȯm, is used when referring to any fabric of plain, undyed, hibiscus fibers. It is used for mosquito netting and canoe-covering fabrics, as well as for women's skirts.

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horizontal tension loom from plain, undyed hibiscus fibers. The net was made in various widths by sewing together strips of woven fabric, six or more feet in length. Sewing was done with a coconut leaf midrib needle and hibiscus fiber thread. The completed net was then suspended over a sleeping area. Large nets were suspended over sleeping platforms by a system of lines running to wall posts and wall plates. Smaller nets were doubled, tent-like, over a line running between two short posts stuck into the ground, and the sleeping mats spread on the ground beneath the net. Today, mosquito nets of Japanese manufacture are found in every house.

Wooden chests, or strong-boxes (sop) of native manufacture were formerly a standard item in every house. Today, wooden lockers of Japanese and American manufacture have replaced those of local make. Valuable pieces of clothing and ornamentation, cakes of turmeric powder, etc., were kept in these boxes; it was common practice also to keep some sweet-smelling herbe, or a coconut flask of perfume, in the box in order to impart a sweet scent to the clothing stored therein. The chests were made by splitting a breadfruit tree trunk in half, the body of the chest being fashioned from one half and the lid from the other half. They were generally made in a rectangular shape, attaining a maximum length of about 5 ft. and a maximum height of 1 1/2 ft. Most of these chests were equipped with lugs at either end such that a length of coconut fiber cord could be stretched

between them, across the top of the lid. Since the owner of each box had his own special method of attaching this cord, attempts to break into the box could usually be detected. (See fig. 79). Little or no use was made of hanging or swinging shelves, wall pegs, etc., for storage of material objects. Rafters and wall plates served as storage places, and packages of food and other odds and ends were often placed on end plates.

A description of a kind of suspension cradle (nikönönyn) was obtained from one informant, according to which a length of plain, white hibiscus fabric (toonom) was sewed at either end to a transverse stick, and the whole suspended by cords of coconut fiber from the house beams or from two stakes driven into the ground.

CANOES

Introduction

The general term for paddling canoes is wa fötyn. The basic type is represented by the small fishing canoe (sein efief) which is essentially a double-ended, single outrigger in which the paddlers sit single-banked. A larger version of this basic type, termed sein maun, with wash-strakes sometimes added, was used for warfare. A third type of paddling canoe (meniepep), fitted with a platform rising outboard opposite the outrigger, was also used in warfare. These canoes are all paddled with the outrigger on the lee side, away from the wind, in distinction to sailing canoes, which run with the outrigger on the weather side. Float connections are normally in the form of paired vertical stanchions, two pair being attached to either boom, so that they rest on the topside of the float but do not penetrate it. There are indications in the literature, however, that inserted stanchions and crutch connectives may occur as alternative methods.[1]

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1. Information concerning all three types of paddling canoes was obtained from informants plus observation of the first two types. That dealing with the large war canoe (meniepep) has been obtained largely from Kramer (1932: 235-38), since this type canoe, unlike the others, can no longer be observed on Truk.

Sailing canoes (meniyk) seem to have been used fairly extensively on Truk in former times. These were single outriggers equipped with a counterpoise platform built outboard on special booms projecting from the side opposite the outrigger. A plaited pandanus mat sail was attached, by means of yard and boom, to a mast located amidships.

The basic type of paddling canoe (sein efief) is observable everywhere on Truk at the present time. A few specimens of the larger sein maun can still be seen on the island of Pata, but the special type (meniepep) is no longer to be found on Truk. Sailing canoes are still made, and used to some extent, on Pis Island, located on the outer barrier reef.

Fishing Canoe

The small fishing canoe, commonly referred to as sein efief or sein attau, is a double-ended single outrigger fitted with two booms (see fig. 80). These canoes are used for fishing near the home island and are never taken outside the lagoon. They range in size from a one or two man canoe of 8 to 12 ft. in length, to a five or six man canoe of approximately 30 ft. in length.

Hull

The hull (inisin wa) is fashioned from a single

breadfruit log, no strakes of any kind being used in its construction. The inside of the hull (neefööñ wa) is given a characteristic convexity by completing the dubbing-out process with a spout adze (see fig. 81). Today, axe and adze blades of European make are attached to hafts of local manufacture, and are used for all canoe work. In pre-contact times the less efficient shell adze blades seem to have been supplemented by a process of burning or charring the wood previous to cutting with the adze.[2]

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2. This is reported in the literature and was verified by informant Kekkin on Romonum Island. The term, jöku, was given for charring wood with live coals.

The sides of the hull (ǿryn wa) are symmetric and the ends (sǿǿp) are made as nearly alike as possible, due to the fact that the outrigger is always kept on the lee side, thus necessitating that the canoe go in either direction (forward or backward) with equal facility. Part-way down the cutwater at either end are two projections, termed ǿsǿnǿng (see fig. 82), stated by Kramer (1932: 238) to act as a protective device against running the canoe on to stones or rocks. These projections ride just above the water line.

Identical, vertically-tapered end pieces (sǿpposä) are often lashed to either end of the hull (fig. 83). A more common practice observed today, however, dispenses with

these separate end pieces by incorporating low, flat-topped end pieces (sǫ̈ppac) as an integral part of the hull (fig. 82). Romonum Island informants stated that this custom was started on Udot Island during Japanese times. To attach the sǫ̈pposä̈ to the hull, the adjoining surfaces of both are coated with heated breadfruit sap and a layer of dried coconut fibers placed between the two. The end piece is placed in position on the hull and the lashing done with a continuous line of sennit cord. The line passes through a series of paired holes made at an average distance of 2 in. from the edge of either piece (fig. 83). The line is attached to a length of coconut leaflet rib to facilitate its passage, and is pulled tight by one or two workers stationed on either side of the hull. A series of turns are made between a pair of holes, the working end is dogged about the center portion of the standing lines, and is continued on the inside side of the hull to the next pair, where the process is repeated, etc. The line is finally secured between the last pair of holes by dogging and knotting about the center portion of the standing lines. The inside edges of the end piece are undercut slightly so that the lashing is protected from rain and sea water. All holes through which lashing passes are either caulked with a limestone cement (ämät; see "Chemical Industries"), or plugged with wooden dowels. The lashings which are exposed on the outside, between the holes, are countersunk so that they lie flush with the hull surface, and are also covered with ämät.

The hull is cut away in a characteristic fashion on either side along the keel line. The cutting is done from the keel line in the direction of the gunwales, so that a long, narrow, rectangular surface, termed fät, indented 1/8 to 1/4 in. below the hull surface, is formed along both sides of the keel line, running almost to the point where the cutwater begins to sweep upward at either end. The fät is bounded at either end by a triangle in outline form, termed nóóng, raised 1/8 to 1/4 in. above the hull surface. (See fig. 84). Hull surfaces are fined down at either end to within 1/4 in. of the cutwater, where a shallow flange extends laterally on either side. These flanges are termed pöön uuc and extend along the cutwater, from nóóng to óónóng. Dimensions of fät and pöön uuc do not vary greatly on smaller fishing craft, but on larger paddling canoes correct dimensions are considered essential to speed and maneuverability, and vary according to the preference of the particular canoe builder. These features are not present on sailing canoes.

Thwarts (só) are lashed across the gunwales at varying intervals, the average being about 1 1/2 ft., with the intervals between thwarts progressively lessening towards either end. The longitudinal edges of most thwarts are usually convex in shape (fig. 85). Ends of thwarts lie flush with the outside sides of the hull and are lashed to the hull at either end with two separate lashings which are countersunk on all outward surfaces. Lashings are secured

by dogging the working end of the line about the standing lines and knotting, on the inside of the hull. All holes and lashings are commonly caulked on the outside with ämät.

The waist section of both gunwales (aaman) is raised an average 1 3/4 in. for a distance slightly greater than that between the two outrigger booms, and is notched to receive the booms; the depth of these notches is adjusted so that the booms will project in as nearly a horizontal position as possible. (See fig. 86). These raised sections are called tirifŏuup.

Occasionally on small canoes, more commonly on larger paddling canoes and sailing canoes, two removable boards or bulkheads (kuup) are fitted across the hull, and by means of a hole near the top, are lashed to the outside of either outrigger boom (fig. 87). The bottom edges of these boards may be cut off in a blunt square, or tapered to fit the curvature of the hull, in which case they are notched to allow free passage of bilge water when bailing. The space enclosed by these bulkheads is covered over with a board (maatyng) which rests across the two outrigger booms, and is used for storage of goods.

Outrigger System

The outrigger frame consists of two squared booms (kiŏ) extending outboard on the lee side for some distance, and braced distally by a cross piece, waaiso. The outer edge

of this piece butts against the inner stanchions, both ends being equipped with a curved, projecting section designed to give purchase to ropes which are passed around these sections and through holes in the top surface of the float, thus pulling the float upward and tight against the feet of the stanchions, which in turn are lashed to the booms. (See figs. 88, 89). The booms are further braced proximally by a second cross piece, mesenap. The underside of this piece, along the straight proximal edge, is flanged to an average depth of 1 in. Notches are cut in this flange to receive the outrigger booms, so that when in place the flange normally rests on the lee gunwale while the main body of the piece is lashed to the booms. Curved projecting sections are found on both ends of this piece, the direction of curve facing that of the curved waaiso projections. The stanchions are braced by a short stringer (ceeteam) which runs from the left side (facing the hull) of the stanchions diagonally upward to a point a few inches outboard of the hull, where it is lashed to the boom and to a longitudinal stringer (waatippu), which in turn is lashed to the underside of both booms.

Both outrigger booms are fitted in notches cut in the gunwales, and on the weather side they extend outboard a few inches to allow a narrow, subcrescentric board (tinikäsä) to be placed across them. The proximal edge of this board is flanged underneath, in a manner similar to the

mesenap, the flange resting on the weather gunwale. The main body of the piece then rests on the boom ends (see fig. 90). The tinikäsä is ordinarily lashed to the gunwale, the lines passing through a hole made midway along the length of the flanged longitudinal edge, and through another hole made at a corresponding point in the gunwale (fig. 91). By an alternative method, the tinikäsä may be lashed to the booms, the lines then passing through holes made in the face of the tinikäsä (fig. 92).

The technique of lashing is in either case the same, a similar technique being employed to lash the transverse pieces of the outrigger platform to the booms, and also in lashing thwarts to gunwales. The two ends of a length of sennit cord are put through the two holes from the outside. A slip knot is tied in one of these ends, after first knotting the end in an overhand knot. The other end of the line is passed through the slip knot and the knot tightened down after which the free end is given a number of complete turns through both holes. In this technique, termed wenicar, the lines are parallel in contrast to crossed-lashing technique (nipwenkacen). After sufficient turns have been made, the inside standing lines are pried up with a knife or other suitable object and the working line knotted about the standing lines.

An outrigger platform is normally provided by the

addition of two rectangular boards, termed cɔ̈cɔ̈rarau, placed between mesenap and waaiso and lashed to both outrigger booms (fig. 88). The lashing in this case, as well as for waaiso and mesenap, passes through holes made in the surface of the piece, the ends of which rest flush with the outside of the booms. An additional board (maatyng) is normally placed across the booms, between the two gunwales, but is not lashed in place (fig. 80).

Booms The two squared outrigger booms (kiė) are the same, i.e., there is no differentiation of fore and aft boom. They are placed the same distance from either end of the hull and extend outboard from the hull in a nearly horizontal position, tapering slightly toward the outer ends. These ends, beyond the stanchions, are normally decoratively carved (fig. 93). The booms are usually equidistant throughout their length, although one canoe observed on Pata Island showed a slight distal eversion.

Float The float (tam) is normally canoe-shaped, with tapering ends, a gentle rounded bottom, and a slight upsweep at either end (fig. 89). A median ridge extends the length of the topside, and opposing holes (pwangen tam) are made on either side of this ridge, the section beneath the ridge removed, and stay lines passed through underneath the median

ridge. Floats observable today average in length somewhat less than half the length of hulls. Floats are held in place against the feet of paired upright stanchions by means of coconut fiber ropes passed through beneath the median ridge of the float and around the ends of the distal cross piece, waaiso. If the canoe is to be stored for any length of time the float is removed by undoing this rope lashing; at other times, when temporarily out of water, the float is allowed to rest on the ground, or on a log or stone support. Occasionally the float is decoratively carved and painted on the top surface.

Stanchions Two pair of upright stanchions (aam), an outer and an inner, are lashed to either boom a few inches in from the end, and [redacted] rest on the topside of the float but do not penetrate it.[3] Haddon and Hornell (1936: 394), using

3. Kramer (1932: 238, fig. 198) shows a crutch-like, rectangular connective apparently passing through the boom, and says that with this type connective the outrigger platform is practically non-existant. He indicates that this arrangement was common on smaller paddling canoes, but as observed today, paired connectives and outrigger platform are practically universal. In this regard, Haddon and Hornell (1936: 382) state that both stanchion and crutch-type connectives may

occur in the same area, the crutch type having developed from the stanchion type and the latter often occurring as an alternative method among smaller craft.

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material largely supplied by Alexander, state that these stanchions are inserted: "The outrigger consists of two straight booms, each connected with the float by two pairs of inserted stanchions, an outer and an inner, which project upward beyond the booms on both sides relatively to an extraordinary height....The lower ends of the outer pair of stanchions are inserted close together into the float immediately under the boom in a slightly divergent direction, so that the boom comes to lie between them and is then lashed to them and to the inner pair, which have a similar arrangement. The distance between the boom attachment and the float is very short, and wholly disproportionate to the length to which the stanchions project above...." As observed today, the members of both the outer and inner pair are lashed to the boom in a slightly divergent direction, both pairs being lashed together at the bottom, where they rest on the median ridge of the float. Stanchions are often decoratively carved and painted. (See fig. 94).

Outrigger Attachments

Boom to hull The boom is fitted into a notch in the gunwale and lashing is done with a length of two-ply coconut fiber cord (single or doubled) by passing the line through a hole made in the hull directly beneath the boom. (See fig. 95). After passing through the hole, the ends of the line, separated by the gunwale, are brought up on the same side of the boom. The shorter, or standing end, is looped and the loop placed on the topside of the boom. The working end is crossed over the loop, passed down on the outside of the gunwale, through the hole, and up again on the inside of the gunwale to the topside of the boom where it crosses the first strand. This operation is repeated a number of times, crossing on the topside of the boom each time, after which the line is given a number of turns horizontally around all vertical standing lines, passing back and forth across the gunwale on the way, in order to tighten up the lashing. The working end of the line is then brought up on top of the boom again and a loop (#1) is made in the end of this line. This loop is passed into the loop left at the beginning of the operation (#2). The free end of #2 is pulled so that it tightens down on #1. The free end of #2 is looped again (#3) and this loop passed into #1, the free end of which is tightened down on #3. The free end of #1 is passed through #3 and it and the free end of #3 are pulled together, thus securing the line.

Stanchions to boom Two pairs of stanchions (aam), an outer and an inner, are lashed to either boom. The outside pair is attached first, the first step being to tie the two elements of the pair together at the bottom with a temporary lashing. This makes it possible to force them up against the boom, one on either side, so that they diverge at the top. Because of the bottom lashing, they remain in place while being lashed to the boom. A slip knot is tied in the working end of the line, passed over the left stanchion (as the worker faces) and tightened down at the point of junction of stanchion with boom (fig. 96). The line is passed straight across the topside of the boom, passed around the right stanchion, and brought back underneath the boom. It is passed around the left stanchion and brought back across the topside of the boom, crossing the standing line on the way. This procedure is duplicated five or six times, the lines alternately crossing on the top of the boom each time. The pattern formed by this crossing technique is termed nippwenkkacen.

A lozenge, or diamond, pattern (kuum) is formed by the crossing of the lines on the outside of either stanchion by reversing the direction of placement of these lines. (See fig. 97).

The working end of the line is next given two complete turns about the boom, on the side of the stanchions farthest from the worker. It passes around the right stanchion and is wound thrice around the portion of the stanchions below the

boom. (See fig. 98).

Next the second pair of stanchions is fitted to the boom and the line is continued from the left outside stanchion, around the right inside stanchion, and diagonally across the top of the boom from right to left. The inside pair of stanchions is then lashed in the same way as the outside set.

Next the temporary lashings at the feet of either set of stanchions are removed, and a small chip of wood is inserted between the two sets. The working end of the line is brought down from the right inside stanchion to a point level with the chip, where it is given a full turn once around both sets of stanchions. It is then wound a number of times about the chip, at the same time tightening down on the turn about both sets of stanchions. The line is finally brought up along the left inside stanchion and secured just above the boom by tying two overhand knots. (See fig. 99).

Diagonal stringer to stanchions A diagonal stringer (ceeteam) is lashed first to the left outside stanchion at a point an inch or so above the stanchion foot. A short length of coconut fiber cord is given two full turns about stringer and stanchion, the turns crossing on the inside. The line is secured on the outside of the stringer by tying a square knot. The same procedure is followed in lashing the stringer to the left inside stanchion. The lashing of the opposite end is described below.

Longitudinal stringer to booms The proximal end of the diagonal stringer (ceeteam) is lashed to a longitudinal stringer (waatippu) in the same operation by which the latter is lashed to the underside of both outrigger booms. (See fig. 100). A length of coconut fiber cord is looped a half turn about the waatippu on either side of the boom. The free ends of the line, one of which is left short, are brought up on the topside of the boom where the short end is looped and the longer end then crossed over it to the right and again given a half turn about the waatippu. The half turn is repeated on the opposite side (left side), crossing the standing lines on top of the boom on the way. The line is given an additional three-quarter turn about the watippu, still on the left side, and then passes beneath the boom from left to right, over the watippu on the right side and back underneath the boom. After passing once more left to right beneath the boom, the line is brought up on the topside of the boom where it is secured in a manner similar to that described under attachment of boom to hull.

Having been secured, the line is not cut but is continued to the left side of the boom where the diagonal stringer (ceeteam) has been placed in position, resting on the longitudinal stringer (waatippu) just to the left of the boom. The line is given two full diagonal turns about both ceeteam and waatippu and secured with a double overhand knot. As an added precaution the line may be given a few turns

about the vertical lashings joining waatippu and boom before securing with the overhand knot.

Float to booms The float (tam) is lashed to the booms (kiȯ) with the help of the most distal of the transverse outrigger boards, the waaiso. (See fig. 101). A length of heavy sennit rope is laid across the waaiso, just inboard of the longitudinal flange which is situated on the top surface of the latter, along its outer edge. This flange prevents the rope slipping off between waaiso and stanchions, where it would soon fray through by rubbing against the sharp edges of the booms. The rope at either end of the waaiso is passed down through holes made in the topside of the float, and up to the distal end of the boom; a double turn is taken about this end, and the line passed back in under the median ridge of the float and comes up over the end of the waaiso. A turn is made about the waaiso and the working end of the line secured by looping about the standing line where it lies across the topside of the waaiso.

Decoration

End piece decorative lashing Decorative lashing is applied to the raised end piece (sȯpposä) by dogging small-diameter, two-ply coconut fiber cord from bottom to top, the individual turns averaging 1/8 in. apart. (See fig. 102). For this purpose the two legs of the sȯpposä are slightly undercut

and a number of holes, averaging about nine in number, are made along both undercut surfaces through which the lines are rove. Before the lashing is commenced, the outer surfaces of the end piece are covered over with fresh, clean coconut stipule and the lashing then applied over this covering. The lashing is begun at the foot of either leg, passed around the end piece and through the bottom hole on the opposite leg; it is brought up through the adjacent hole, passed back around the end piece to the original side, etc. The line is dogged about the neck of the end piece, where no holes are necessary, and at the head it is secured by knotting.

Decorative figurehead At the summit of the raised end piece on either end of the canoe man be fastened a decorative figurehead, Ăcen (fig. 103). These figureheads were not ordinarily used on the smaller fishing canoes but were reserved rather for the larger paddling canoes. They seem to have been exhibited on all occasions of any importance, including warfare, but are no longer used on Truk. Kubary (1895: 53) writes: "The figurehead can be raised or lowered by a cord and under certain circumstances this may be of special importance: Boats by lowering the figureheads signify their peaceful intentions as they approach land." Kramer specifically mentions this as not being the case while he was on Truk. Certain it is that the piece could not very well be raised and lowered by a cord since it was firmly lashed to the top

of the raised end piece by a length of cord which passed through two holes, one an inch or so below the summit of the end piece, made along the same axis as the body of the canoe, and the other in the base of the figurehead. The pieces were made from the wood of Ficus prolixa (jaaw). A large flat board, about 1 in. thick, was hewn from the trunk of this tree, and the design of the piece laid out on the board with red paint, appar. Only the master canoe builder (souwfanafan) could make these figureheads.

Polishing and painting hull The completed hull is polished and painted before adding the outrigger. A smooth outer surface is obtained by polishing with various grades of abrasives. A kind of coral (kamaat) is used first, followed by pumice stone (matto) and a final polish being obtained by rubbing the surface with a kind of sea plant or sponge, emeniwi. The hulls of all smaller fishing canoes are painted black, using a paint (öpwyn) compounded from hibiscus wood ashes and sap from the inner bark of the mangrove tree. This paint is applied with the flat of the hand and after it has dried a protective coating of pure mangrove bark sap is added. Today, commercial paint and tar, obtained from the Japanese, is used extensively in place of native paints.

Incising and carving Various parts of the outrigger may be decorated by cutting incised geometric designs into surfaces

which have been painted black; the hull, however, is left with a plain black surface. The distal ends of outrigger booms and stanchions are often carved in the round. The ends of the float are occasionally swept boldly up and back. In addition, narrow longitudinal and transverse ribs may be cut in relief on the topside of the float. Decorative incising and carving is carried out to a greater extent on the larger paddling canoes, and small fishing craft are often without decoration of any kind.

Coconut leaf decoration Larger paddling canoes are decorated by stringing young coconut leaflets around the outside of the gunwales, a procedure known as öppörön wa. This is done today for festive or special occasions and formerly, according to Kramer (1932: 235), was to be seen also on war canoes. Half-leaflets, i.e., lengths that have been stripped from either side of the leaflet midrib, are used for the purpose. Small-diameter paired holes, one approximately an inch above the other, are made in the sides of the hull just below both booms. The ends of two long lengths of coconut fiber cord are tied together and each of the free ends is then passed through one of the holes of a pair (beginning on either side of the hull). The knotted ends are pulled up tight against the inside of the hull and the two parallel lines are continued to the more proximal end of the hull, the top line making a full turn around all thwart lashings on the way. The lines

pass through two more sets of holes which are made through both sides of the raised end piece (sȯpposä) as near to the inside end of this piece as possible. Lines are continued down the opposite side of the hull, as before, and are joined on the inside of the hull after passing through the set of holes corresponding to that on the original side. A second set of lines is strung about the other end of the hull in the same way, utilizing the two sets of holes remaining from the four which were made beneath the booms. The leaflets are tied to the upper of the two lines, as shown in fibure 104. They touch one another but do not overlap and are held in place by the lower line which lies on the outside of all leaflets. All leaflets are cut off evenly just below the lower line.

Large racing or War Canoes

A larger version of the basic fishing-type canoe, termed sein maun or sein kittir, is observable on Truk today. These canoes are similar to smaller paddling canoes in practically all respects, but attain lengths of 40 to 50 Ft. and are capable of carrying as many as twenty men. Canoes of this size were probably used formerly as war canoes, the paddlers sitting single-banked with additional paddlers sitting on the weather-side board (tinikäsä) and on the inner-most board of the outrigger platform, mesenap. Informants state that these canoes were used before the recent war in

inter-island canoe races, this sport apparently having been initiated by the Japanese, since there is no mention of such races in the literature on aboriginal Trukese culture.

Details of hull and outrigger construction, including outrigger attachments, are the same as those pertaining to smaller fishing craft. The chief difference between the two types lies in the addition of washstrakes, and the greater amount of decorative carving and incising, on the former. Due possibly to the great strain imposed by the weight of a large outrigger, washstrakes are usually sewn on either side of the hull, along the waist section. These strakes are sewn as in fig. 105, with a continuous line of two-ply sennit cord, all lines passing on the outside surface of the hull being countersunk and caulked with limestone cement, ämät. Stanchion tops and boom ends are carved in the round and various parts of the outrigger, including stanchions, are decorated by incising on a black surface. The figure-head (äcen) is normally used with this type canoe.

Large War Canoe with Weather Platform

A third type of paddling canoe (meniepep), no longer observable on Truk, contained some features of both paddling and sailing canoes. Canoes of this type were large. Kramer (1932: 235) mentions one such canoe on Pata Island: "I saw a meniepep at Jepin village on Pata with a length of 21 meters and capable of carrying 60 men in calm weather. The

inside height of the hull was 72 cm., and the outside width 55 cm. Three outrigger booms supported a float 9 1/2 meters long, with stanchions 200 to 234 cm. long." Hull and outrigger, including arrangement of stanchions, were apparently the same as for the smaller paddling canoes, although the hull, because of its great length, was probably built up by adding strakes.

Like the sailing canoe (meniyk) this type of canoe had a platform (epep) rising outboard at an angle, on the side opposite the outrigger. Kramer (1932: 238) describes this as follows: "The chief difference between meniepep and the smaller paddling canoes is in the platform, which on the former lies opposite the outrigger as on sailboats, but in this case lying on the weather side (since meniepep are paddled with the outrigger to lee, like all paddling canoes). Two long platform supports, pecen epep, are raised high above the water on a sleeper, tinikäsä, (which in this case is not the semicircular board of the smaller canoes). The pecen epep butt against the lee side of the hull, underneath the gunwale. The gunwale is strengthened by a plank, which, like the ordinary sitting board, mesenap, is used for sitting purposes, and is called mesenap. From this plank a second plank, vënilu, runs paralled to it and is supported by two stringers, vaedip, one at either end, and runs underneath the outrigger. This plank, vënilu, is used as a foot support by anyone sitting on the mesenap, in case the thwarts are occupied by paddlers."

Kramer (ibid: fig. 199) shows a partial illustration of the arrangement of the mesenap and vënilu planks, in which both outrigger and weather platform booms pass through the sides of the hull. Figs. 106 and 107 show a suggested reconstruction of Kramer's completed sketch. In this reconstruction, the mesenap plank is notched underneath to receive the outrigger booms, so that it can in turn rest on the ends of the weather platform booms. The vënilu plank (h) and the mesenap (f) are made to function as a single unit by the use of two connecting stringers (g), one on either end. This unit of mesenap and vënilu then constitutes a sort of fulcrum on which work the counter-balancing forces exerted by the weight of the outrigger on the lee side and the outboard platform on the weather side (indicated by arrows).

The use of such a weather platform may have been required in large canoes as a counter-balance against the great weight of the outrigger. These canoes, according to Kramer (ibid: 235), were used in flotillas of forty to sixty, as war canoes, and were equipped with the ornamental end piece, ächen. At the time Kramer was on Truk, the meniepep canoes had all but disappeared, due probably to the suppression of warfare under the German administration.

Sailing Canoes

Sailing canoes (meniyk) are found today on Truk only on the island of Pis, located on the barrier reef. They were more plentiful at the time Kramer visited the islands

and he describes them in some detail, giving photographs and sketches (1932: 228-234). Truk, however, since it is composed largely of high volcanic islands and therefore rich in natural resources, was never the center for the manufacture and use of these open-sea craft, but it was the outlying coral islands, in particular Puluwat, some one hundred miles to the west, which utilized the meniyk type canoe most extensively in visiting Truk and other islands for trading purposes.

According to Haddon and Hornell the sailing canoe employed in the western and central Carolines is basically the same throughout the area with minor local variations. Their adequate description (1936: 376-382) of the salient features pertaining to this generalized type should be summarized briefly: essentially, the Carolines sailing canoe is a single outrigger equipped with a counterpoise platform built outboard on special booms projecting from the side opposite the outrigger. The canoe is sailed with the outrigger to windward in distinction to the paddling canoes which have the outrigger on the lee side at all times. The hull is typically axially asymmetric with the weather side more rounding and fuller than the lee side, although cases of symmetric hulls have been recorded. The dugout base of the hull, which is fairly straight along the bottom, is built up with an irregular pattern of strakes. Stiffness is obtained by the use of strong thwarts and bulkheads. A gunwale rail is usually present. The outer surface of the hull is painted with a typical black and red pattern.

The outrigger frame is made up of two booms, having a downward curvature toward their distal ends. The float connection consists of four crutch-shaped Y connectives which are inserted into the float and lashed two to either boom. There is a fairly substantial outrigger platform. A platform is also built athwart the two booms extending outboard on the lee side opposite the outrigger, and a small thatched hut is generally erected upon this platform.

The mast is stepped in a socket cut in the innermost plank of the outrigger platform, and is supported by a shroud attached to a yoke athwart the distal ends of the booms and by a fore-and-aft running stay made fast at either end of the hull. The sail is in the form of an isosceles triangle with the long sides bounded by two spars. When under weigh, the apex of this triangle is rested against a sail step cut into a short thwart at the end of the hull.

Unfortunately, the writer was able to visit Pis Island for only a few hours at the end of his field trip, and consequently only a hasty examination of the sailing canoes on that island was possible. They appear to agree in detail with descriptions of such canoes given by Haddon and Hornell, although the hulls, in cross-section, appear to be axially symmetric, rather than asymmetric.

It was possible, however, to make a detailed examination of a Puluwat Island sailing canoe, the crew of which was engaged in a trading expedition to Truk. Since it is im-

possible at the present time to compare details of this canoe with those relating to a canoe manufactured on Truk, it is thought better to exclude this data from the present paper and to present it at a later date in a more suitable context.

Canoe Accessories

Paddles Canoe paddles (fötynen wa) are made preferably from the wood of Thespesia populnea (pönö). Cordia subcordata (jannö) may also be used and occasionally Hibiscus tiliaceus, sinifö. Haddon and Hornell (1936: 395) describe the Trukese paddle as follows: "The paddles have the elegant lanceolate blade usual in the Carolines. The point is acuminate and has a peculiar thickening which is characteristic of the Truk Islands and probably related to the ridged point of the Hawaiian paddle...The loom is plain and without a grip." Figure 108 shows details of a type specimen collected on the island of Pata.

Paddles are hewn from a single piece of wood using the straight-edge adze, tiköttik. The finished piece is smoothed down by rubbing with a kind of coral (kamaat), stated to be found only on the outer, or barrier, reef; a piece of glass is used for this purpose today. The piece is given a smooth lustre by polishing with a collar (muunu) made by winding a length of coconut fiber cord about the fingers to form a core, and then dogging the working end completely around the circumference of this core, securing

the end with a square knot. This collar is fitted over the loom and, grasped tightly in the right hand, is rubbed rapidly back and forth along the length of the loom.

The paddle can be used on either side of the body. The lower hand is always placed on the top surface of the loom, while the upper hand grasps the loom either from the top or from underneath, being placed just below the end of the loom.

Bailers Wooden bailers (nuum) are used in most canoes, although a half coconut shell often serves to bail out the smaller craft. Bailers are made from breadfruit or hibiscus wood. The inside is dubbed out, leaving a small-diameter median bar projecting from the back end for use as a handle. (See fig. 109). The bottom is typically not a smoothly rounded surface, but rather has a median ridge beginning some distance from the back and becoming progressively deeper towards the front, so that the lip, or spout, is in the form of a shallow V.

Double Canoes

According to Haddon and Hornell (1936: 409) the description of Morrell, in 1832, of a Trukese double canoe is the only recorded observation of this type of craft in the literature on Micronesia. They quote Morrell as follows (ibid: 408): "Two canoes are fastened together abreast of

each other, with bamboos extended across them, on the same principle of construction as our twin ferry boats. These canoes are generally about 40 feet in length, and the distance between them is from 8 to 10 feet. The bamboos which unite them are placed about 2 feet apart, and strongly secured to the gunwales by a lashing of their bark cord. Small sticks of bamboo are then extended fore and aft, secured to the cross pieces, thus forming a light platform from 20 to 25 feet in length and 8 or 10 feet wide. They paddle on the two outsides and insides of the canoes, propelling them forward with astonishing speed...They are called war canoes, and many of them have very curiously carved heads and sterns which rise from 1 to 3 feet above the hull, not unlike the fashion of the New Zealanders."

Kramer (1932: 239) gives the term eavan, with variations, for the double canoe. Informants on Romonum, however, stated that the term ää̈wön refers to a particular type of figurehead used occasionally on single sailing canoes (fig. 110) and were unable to supply a term for double canoe. The same informants agreed that the form of the spirit offering receptacle, nän, peculiar to Truk, does represent the hulls of two sailing canoes, and it is thus possible that the design of these receptacles is derived from that of true double canoes which existed in former times.

Model Racing Canoes

Model racing canoes (nuunu), from 4 to 6 ft. long, were used for recreational and ceremonial purposes. They are no longer found on Truk although small, crude toy canoes for children are occasionally made from the frond midrib of the ivory nut palm. Hull and float of the nuunu were of hibiscus wood, the former long and narrow and fitted with the characteristic forked end pieces of the Caroline Island sailing canoe. Outside surfaces of the hull were painted in the typical red and black patterns of sailing canoes.

A single boom was fitted directly to the float by insertion in a hole made in a longitudinal ridge on the topside of the float. The proximal end of the boom was attached to the hull in a manner similar to the float attachment. The boom was braced by two oblique struts running from the hull to a point about two thirds the distance outboard on the boom.

The inside of the hull was not dubbed out but left flat on the top surface except for two paralled longitudinal ridges amidships for attachment of the boom. The mast was pivoted amidships of the hull and supported a sail of the same inverted triangle pattern used on sailing canoes. The sail consisted of the leaf of a species of dry land taro (enippo). According to Kramer (1932: 242) the leaf was folded over the yard, or fore spar, and sewed to the boom by

means of coconut leaflet strips.

These model canoes were made and raced by men purely as a sporting venture; one informant on Romonum Island told how a group of Romonum men took their model canoes to the village of Föyp on Tol Island, a distance of approximately one half mile WSW, and raced them back to the home island. The canoes were also used in conjunction with the annual breadfruit summoning ceremony. On these occasions, the model canoes owned by various men on the island were raced against the canoe owned by the practitioner of breadfruit magic (souwattomei), in which case a victory for the latter meant the assurance of an adequate breadfruit crop for the ensuing year.

Rafts

A sort of raft (fööfas) was formerly constructed from frond midribs of the ivory nut palm. It was used apparently only for sport and was discarded after use.

CLOTHING

Introduction

The basic garments in former times were the woman's wrap-around skirt and the man's loincloth. There were in addition poncho-like capes and cloaks, worn by both sexes, and a conical pandanus leaf hat, worn by both sexes. Reef shoes were used occasionally. Clothing was produced exclusively by weaving on a horizontal tension loom, using banana and hibiscus bast fibers. (See under "Weaving"). Bark cloth and feather garments were apparently never known on Truk.

Children regularly went naked until about four or five years of age. At this time the boys were clothed in a discarded woman's cape (soosiang) which hung loosely about the body, while the girls were given an old wrap-around skirt; in some cases a girl would be given a small cöityr, or fancy striped skirt. Boys commenced wearing the true loincloth (akkacawar) at about the age of puberty, apparently with little or no ceremony. Girls, when they attained to marriageable age, began regularly wearing the more elaborate cöityr.

For everyday wear the men went about in a loincloth but seldom anything else, particularly when working. Women restricted themselves to a skirt when working around the house but would usually don a cape (soosiang) if going on the

water or anywhere where a brother might accidentally see the breasts. Both sexes wore the conical pandanus hat (saaim) when going on the water for any length of time. For special occasions, as dances, meetings, feasts, etc., a cape or cloak was often worn by both sexes over the basic skirt and loincloth. Garments used for such occasions were always of the best, i.e., of banana fiber treated with yellow turmeric powder (teik), most individuals keeping a few such special garments stored away in wooden chests (sop) for special occasions. Those who owned the ornamented cape (epep or teejaw) wore it at such times. Married couples usually slept naked under a woven hibiscus fiber mosquito net, toonöm. Single women could sleep in a wrap-around skirt if they so desired. Single men who had no mosquito net would often wrap the body in a long cloak (mörop) as a protection against insects.

There was little clothing differentiation according to status. Chiefs and men of wealth wore somewhat more richly ornamented garments, but were not marked off by any special item of clothing. This privilege was reserved for the specialist in native lore (itang) and for the breadfruit summoner, souwattomei. On those occasions when the itang talked to the people in the wuut, he wore a special cloak (nite) which was woven from banana fibers along the same pattern as the ordinary man's cloak, pinu; at these times also, he was the only person in the wuut allowed to wear the

conical pandanus hat, saaim. The souwattomei possessed a special loincloth (meciijenimei) which he wore during the model canoe races connected with the breadfruit summoning ceremonies, and also at the feast signalling the end of these ceremonies.

Aboriginal clothing and method of manufacture disappeared largely during Japanese administration of the islands, although the German Government had previously been giving European clothes to Christianized natives and to native policemen. Today it is impossible to find a Trukese wearing the old-style garments, or to find a Trukese woman weaving anything other than a few articles for sale as handicrafts. The custom of treating clothing with yellow turmeric powder (teik) continued for a time after the first extensive introduction of European clothing by the Germans but it too disappeared during the later Japanese administration.

Although specific form and material have been replaced by foreign imports, the present-day clothing of the Trukese still conforms in many ways to aboriginal types. Men wear a loincloth (föntosi, from the Japanese) made from cloth imported from Japan; they wear it, however, under the same conditions and on the same occasions as they formerly wore the banana fiber loincloth of local manufacture. Similarly, women wear a piece of imported cloth (kosimaki, from the Japanese) in the same way, and under the same conditions, in which they previously wore the wrap-around skirt of native

materials. The old-time capes and cloaks have been replaced by dresses, shirts, and trousers of European type; these are worn over the basic loincloth and skirt, however, and are worn under much the same conditions as were the capes and cloaks previously.

Wrap-around Skirt

Wrap-around skirts (acyk or ǒkǒru) for mature women were woven in a standard size, approximately 40 in. long by 24 in. wide. The width was such that the piece extended from the navel to just below the knees. The skirt was wrapped around the body approximately once so that the end could be tucked under at the waist at a point just over the hip, and was thus held in place. Frequently, as for dances and other special occasions, the skirt was held in place by an elaborate belt (kin) made of shell and mangrove bark discs, which was placed just below the upper edge of the piece and fastened in front. A less elaborate belt (ǒkkǒnyk or ǒǒnykyc) of braided hibiscus bast fibers, was used in a similar way but more for everyday wear. The skirt could be kept up, however, without the aid of such belts, simply by tucking under at the waist. When sitting or squatting, the wearer stuffed the bottom part of the skirt between her legs, thus preventing any accidental exposure of the genitals. The side of the piece which was uppermost on the loom possessed a finer surface than the underside, and thus became the outer side when in use.

Inferior grades of skirts were woven entirely from hibiscus bast fibers. Hibiscus is more irritating to the skin than banana and does not have the same shiny appearance when dyed black; however, the preparation of banana fibers for weaving is a laborious process and consequently the hibiscus skirts were probably woven in greater quantity although considered less desirable. Menstruating women, and often older women, wore a skirt of plain undyed hibiscus fibers, toonȯm.[1] At the other extreme were the elaborate

1. The word toonȯm is used when referring to any fabric of plain, undyed hibiscus. It is used for mosquito netting and canoe-covering fabric, as well as for women's skirts.

black and white striped skirts (cȯ̈ityr), woven from banana and hibiscus, which were worn particularly by younger women on all special occasions. Other black and white striped skirts, of hibiscus only, had various names according to the arrangement of the stripes, as pwityr, tynykongi, nisȯ̈nop, etc. These were considered less desirable than the cȯ̈ityr but were worn in preference to the plain toonȯm, especially by younger women.

The arrangement of these longitudinal black and white stripes was obtained by inserting black-dyed threads in the warp during the winding process. The white stripes were termed neemȯtȯnan and the black stripes, ȯ̈jin. In German

times, at least, skirts were valued according to the number of ŏjin, which seldom exceeded six in number, according to statements by informants, which check with Kramer. A great variety of designs (niiŏjin) were worked into the black areas by using undyed weft threads. These designs were in most cases given names, usually from natural objects, as parts of birds, fish, etc. The white stripes were often rubbed with yellow turmeric powder (teik) for ornamental purposes.

Loincloth

The men's loincloth (akkacawar) was woven only from banana fibers and attained an average length of 6 ft. Kramer reports that these loincloths approximated 1 ft. in width, but informants state that they were made the same width as the wrap-around skirt and were then folded longitudinally once or twice for wearing. These pieces were of undyed fibers except for a narrow band of black along either longitudinal edge, on which were worked various designs using undyed weft threads.

The loincloth is put on by first folding longitudinally once, so that a width of approximately 1 ft. is attained. The piece is then passed around the front of the body and an overhand knot tied in the rear, leaving one end, which will be the working end, long. The short end is then stuffed underneath the standing part of the piece and the long end passed through the crotch and brought up inside the standing

part of the piece in front. It can be left hanging down 6 in. or so in front, or given a few turns about the standing part.

The loincloth was worn at all times during the day by mature men, although old men sometimes went about with the loincloth draped over one shoulder in such a manner that it hung down in front, partially covering the genitals; old men might also wear the poncho-like cloak (mörop) with no loincloth on underneath it. For special occasions, as love making and dancing, the loincloth was rubbed well with yellow turmeric powder (teik) with or without the addition of perfume in the form of sweet-smelling herbs, leaves, etc. It was customary for a man to keep one or two special teik-prepared loincloths in a wooden strong-box (sop) and to use them only on special occasions. The everyday loincloth, since it was not treated in this manner with teik, could be washed and after long use, might be dyed black. In this manner a single loincloth would serve a man for a long period of time.

Poncho-like Capes

Capes were made from reconverted skirts (acyk) which were dyed black and an oblong slit made in the center for passage of the head. They were used by both sexes.[2] A plain,

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2. Informants were questioned in particular on this point and maintained that old women's wrap-around skirts

(acyk) were used for this purpose. It is not likely that a man wore the skirt that had belonged to his sister or mother, however, Kramer (1932: 92) and Bollig (1927: 170) indicate that the cape worn by women (soosiang) was indeed made from an old skirt, whereas the men's cape (epep) was apparently made from fabric woven especially for that purpose: neither source is at all clear on this point nor are they clear on details of measurements of epep as compared with soosiang.

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undecorated cape (soosiang or nikawin) was worn only by women and was made from any one of the various types of acyk simply by dyeing it black and cutting an oblong slit in the center. The soosiang was worn while fishing in order to protect the skin from the rays of the sun, and was worn also at times on land in order to hide the breasts from the sight of a man standing in a taboo relationship to a woman.

A decorated cape (epep or teejaw) was worn by men on special occasions, but could also be worn by women if they happened to possess one. This cape was made in the same way as the soosiang but was decorated around the neck area by stringing red mussel shell discs (fëypar) and white shell discs (kinyn) on hibiscus fiber lines and in turn sewing the lines to the cape with a palm leaflet rib needle and hibiscus thread. Kramer (1932: 92) gives a sketch showing the arrangement of these lines, and says that they

varied in amount according to the wealth of the owner. During German times, colored thread was substituted for the shell disc ornamentation and the cape was then termed nitinimwar.

Poncho-like Cloaks

Cloaks were worn solely by men and differed only according to whether they were woven from hibiscus or banana fibers. In the former case the cloak was termed mörop and in the latter case, pinu.[3] The form and method of manufacture

3. Also called meci, a generic term used to refer to any garment woven entirely of banana fibers, usually with yellow turmeric powder (teik) rubbed on it. Thus the banana fabric loincloth (akkacawar) might also be referred to as meci. The word referred also to a strip of banana fabric which was used by pregnant women. At about the eighth month of pregnancy the woman's mother or sister wove the meci for her, she being obliged to wear it around the belly. The piece was rubbed thoroughly with teik, and according to one informant, the weaving of the piece was accompanied by many taboos, pin. If either the mother or the child died as a result of the birth, the body was wrapped in the meci and buried. If both lived, the meci was returned to the person who had woven it.

of both cloaks was the same. Two lengths of fabric, each approximately 2 ft. wide and of sufficient length to extend over the shoulder and to within a foot of the ground in front and back (a length of approximately 7 ft.) were joined together by sewing with a palm leaflet rib needle and hibiscus bast fiber thread. The two pieces were placed side by side and the two adjoining longitudinal edges sewed together so that a raised rib was formed, running the length of the garment. A longitudinal slit in the center was left unsewed, for passage of the head. The garment was worn so that the raised rib, formed by sewing the two pieces together, was on the inside, next to the body.

The mörop was considered less elegant than the pinu, and was worn more often by older men. The pinu was often treated with yellow turmeric powder (teik) and when old and dirty, could be dyed black. There was no ornamentation on either type of cloak.

Reef Shoes

Finsch (1893: 334) mentions a kind of plaited coconut fiber reef shoe with strings for fastening to the foot, which he says was described by Edge-Partington for the Mortlock Islands. He adds that a similar shoe may be found in the Museum Umlauff in Hamburg with the place tag "Lord Howe group." It may thus be that Partington was speaking of the Mortlock group located in or near the Lord Howe Islands and

not in Micronesia at all. Informants on Romonum Island were questioned on the subject of reef shoes, and stated that a sheet of coconut cloth could be doubled up and tied to the underside of the foot by means of a length of hibiscus fiber cord; this was done particularly if one had yaws sores on the sole of the foot. One informant mentioned a kind of reef shoe made from coconut fiber cord and fastened to the bottom of the foot by means of "straps" which passed upon either side of the middle toe and tied behind the ankle. He could not give details of manufacture or name for such shoes. Nothing of this kind was observed anywhere on Truk.

Pandanus Hat

A conical hat (saaim), made from pandanus leaves was formerly worn by both men and women as a protection against the direct rays of the sun, as when fishing, sailing, etc. The hat is no longer manufactured on Truk but it was possible to have sample specimens made on Romonum Island by an informant whose father had been an expert in this art.

The material for this hat consists of dead pandanus leaves (möngyn fac) which are still clinging to the bottom of the tree. Although dead, these leaves retain some moisture and are pliable; after being gathered they must be used soon thereafter lest they become completely dry and brittle. The leaves are removed from the tree and cut to lengths of about 3 ft. The barbs along the lateral edges of each leaf are

removed either at the time the leaves are gathered or after they have been transported to the dwelling. These barbs are removed by cutting away a narrow strip along either edge as described for the preparation of pandanus leaves for use in mat making (see under "Plaiting"). The barbs along the midrib of each leaf are removed by scraping with a knife or half of a small bi-valve.

The leaves with barbs removed are opened out flat by pulling back and forth against a post or some other stationary object. By another method, a short hibiscus pole is partially split, and the opened leaf pulled through the split while holding the split ends together with one hand. The opening and flattening of the leaves is termed <u>aamöökö</u>. The opened leaves are then rolled into tight collars by inserting the thumbs in the ends of the roll and pulling the free end of the leaf with the teeth. The collars are strung on a palm leaflet or piece of cord until ready for use. A number of leaves, depending on the size of the hat to be made, but averaging thirteen, are doubled and the two ends sharpened to a point; an equal number are left uncut. Leaves prepared in this manner are termed <u>saaim</u>.

The circular base of the hat (<u>waan saaim</u>) is made from a pliable strip of wood about 1/4 in. wide, 1/8 in. thick, and 3 ft. long. The best wood for this purpose is the aerial prop root of swamp mangrove. The strip is bent to a circular form, the right end overlapping the left end

by about 3 in., and the ends bound together with a length of hibiscus bast fiber.

The waan saaim is placed on the lap as the worker sits. An unpointed leaflet is bent around the outside of the waan saaim, the bend being made in the middle section of the leaf. The leaf is made fast by stitching (teette) with hibiscus fiber thread and coconut leaflet midrib needle, using a bone punch to make holes through which the needle may be passed. Two stitches are made about 1/2 in. from the waan saaim, passing completely through the doubled leaf. (See fig. 111). A pointed leaf is next placed to the right of #1 leaf, such that the latter overlaps it. The stitching is continued to include this second leaf. An unpointed leaf (#3 leaf) is next added on the right so that it overlaps #2 leaf and the stitching continued. This same process is continued all the way around the circular base, working from left to right and alternating pointed with unpointed leaves. Each of the former is overlapped by the adjacent unpointed leaf so that only about one quarter of its surface is visible for a short distance from the waan saaim after which it is overlapped completely (see fig. 112). The body of the hat is given a characteristic concave appearance by pressing the leaves down with the thumb when commencing the stitching near the base.

When the first row of stitching has been completed, it is continued up the body of the hat by spiralling, the

individual courses being about one inch apart. During this process the loose ends of the leaves at the top are held in place by forcing two small hibiscus sticks through them at right angles to one another. These are removed when the stitching has been completed to within a few inches of the top and a flattened pandanus leaf is wrapped around the top as in fig. 113. At the same time short lengths of hibiscus fiber are placed between the saaim leaves and the wrapping leaf so that they stick out at the top to form a decorative tuft or pompon. A hibiscus fiber cord or sennit cord is next wrapped about the base of the wrapping leaf and the stitching continued to include this cord, thus effectively binding the ends of all saaim leaves in a compact bundle at the summit of the hat. The stitching line is finally secured by passing underneath the encircling cord and tying an overhand knot in the end of the line.

Finally, long strips of pandanus leaf 1 1/4 in. wide are bent around the outside of the circular base (waan saaim), over the original saaim leaves, and secured as in fig. 114.

ORNAMENTATION

Introduction

At the present time the Trukese make extensive use of flowers and sweet smelling herbs for purposes of ornamentation. A few of the women know a variety of braiding techniques whereby small flowers are braided into head bands or necklaces by utilizing small-diameter lines of twisted hibiscus fibers. Single flowers, as large hibiscus blossoms, are often worn in the hair or behind the ear. These flower ornaments are worn by both sexes who wear, in addition, a variety of combs, pendants, rings, etc., purchased from Japanese or Americans. Very few, if any, of the old types of ornaments are worn today, however. These were apparently in general use at the end of the German period, and Kramer, who visited the islands in 1906-07, has written rather extensively on this subject as has Kubary. Older informants on Romonum Island were able to recall much of this information and in some cases to demonstrate certain techniques.

Material for ornaments, the general term for which is fout, consisted largely of shell, turtle shell, coconut shell, and mangrove bark. The Trukese themselves made wide use of a cone-shaped shell (kiinyn) from which they obtained thin discs. Small beads of white and red shell (föyppwec and föyppar) were used extensively on Truk but informants agree with the literature in saying that for the most part

these beads were traded in from the Mortlock Islands to the south, either in the form of finished articles or as beads to be strung by the Trukese. Informants were able to give a description of the techniques used in working turtle shell (pwocen pwäpwä) but again it would appear that most of the turtle shell ornaments were traded in from the Puluwat Islands to the west or the Mortlock Islands to the south. Small beads of coconut shell and mangrove bark (föycöön) were made and used on Truk, and also traded in from the Mortlocks. Larger discs of coconut shell (söök) were made for the most part on Truk.

The majority of ornaments consisted of combinations of these discs and beads, plus other materials, strung on hibiscus fiber and coconut fiber lines to form head, neck, ear, and limb ornaments.

Status differences were comparatively little developed on Truk, a condition reflected in the wearing of ornamentation and clothing. Informants were unable to give any instances of special items of dress, ornament, hair styles, or tattoo marks, reserved exclusively for any one person or group. A possible exception to this general rule was the person of the specialist in native lore (itang) who seems to have worn a special cape at those times when he operated in an official capacity. District chiefs were apparently undifferentiated by any special clothing or ornamentation, although in some cases they possessed more richly ornamented garments and a greater number of the more highly valued ornaments. There was a certain amount of sex differentiation as regards orna-

mentation, the men tending to wear the more colorful objects.

Most ornaments were reserved for use on special occasions, as dances, feasts, warfare, love making, etc. The more highly valued objects were rubbed down with yellow turmeric powder and stored in wooden chests (sop) when not in use.

Belts, Arm Bands and Leg Bands

Man's belt The man's belt (pek) was passed around the waist and tied in front; it was worn mostly at dances. The belt consisted of fifteen to twenty or more longitudinal hibiscus fiber lines on which were strung beads of mangrove bark, coconut shell, and red and white mussel shell. At intervals, the lines passed through cross bars of mangrove wood which served to keep the strands together as a unit, measuring on the average 2 ft. in length and 5 in. in width. At either end the lines were braided together into cords which served to tie the belt in place about the waist.

The beads used in the manufacture of pek were for the most part obtained from the bark of a particular kind of mangrove tree, found in greatest abundance on some of the higher islands within the Truk lagoon. Informants stated that this material is lacking on the low islands of the Mortlock and Puluwat groups and that therefore most pek were made on Truk. Small pieces of bark were drilled by utilizing an instrument composed of a length of wood, on

the end of which was lashed a shark's tooth; the wooden handle was rolled back and forth on the thigh, underneath the palm of the hand, at the same time holding the piece of bark against the revolving point.

A number of pierced pieces were then strung on a narrow strip pulled from the frond midrib of a coconut palm, and the pieces rounded and polished between two pieces of coral; that used for this purpose is called piiru or sosomai and is found in the sea, near shore. The pieces were strung up between two stakes, such that they rested on the top surface of one piece of coral, a second piece, equipped with a shallow longitudinal groove, being placed on top such that the groove fitted over the string of bark beads. The pieces were then ground down to a circular shape by moving the top coral back and forth along the direction of the groove.

Similar small beads of coconut shell were made by much the same process. The term for these beads, as well as that for mangrove bark beads, is föycöön. The pieces of coconut shell were, however, drilled with a pump drill (nikanen) instead of the shark's tooth instrument used for mangrove beads. After drilling, the beads were ground down and polished in the same way as described for mangrove bark beads.

Woman's belt The woman's belt (kin) was passed around the waist and tied in front in the same manner as the man's belt. Kin were made in lengths of 2 ft. and widths of 3 in. and were thus somewhat narrower than the man's belt. They were constructed in the same way as pek, but somewhat finer in detail; the beads were smaller in diameter and the cross pieces were made from thin pieces of turtle shell instead of mangrove wood. The beads used in this belt were in practically all cases made from coconut shell and white mussel shell. According to Romonum informants, these belts were seldom made on Truk, but were traded in from Puluwat to the west. (See fig. 115).

Wrist band Wrist bands (ririinppay) were constructed in the same way as the man's belt, pek. They were divided into three sections separated by mangrove wood cross bars. Both sexes wore these bands at dances, one on either wrist.

Ankle band Ankle bands (nikötyttyr) were worn by both sexes at dances. Kramer (1932: 185 fig. 161) gives a sketch showing the technique; a continuous weft of hibiscus fiber is brought back and forth across eight separate hibiscus fiber warps, and is knotted about every other warp. White shell beads are strung between wefts on the first, fourth, and eighth warp. The warps are combined at either end to form two braids for tying about the ankle. Kramer gives a length of 16 cm. and a width of 1 cm.

Arm band Informant Kekkin on Romonum Island described the manufacture of arm bands utilizing the shell of the sea turtle, pwocen pwäpwä. The term for these bands is nikum. The sections of shell are removed by applying heat from a burning coconut spathe to the outside of the section, causing the section to buckle slightly so that a knife can be slipped under it and the section cut off. The sections are wrapped in an old piece of cloth and stored in the house until used.

In order to work the shell, it is first washed thoroughly in salt water and then again wrapped in cloth, together with leaves of genus Fragraea (pöngas). The informant stated that these leaves must be red in color, and are used in order to bring out the mottling in the shell. A section of shell thus prepared is cut to shape by means of a shark's tooth lashed to the end of a short stick: a piece about 1 1/2 in. wide and 9 in. long is cut out of a section of shell, and the same instrument is used to scratch approximately eleven parallel longitudinal lines on one side of the shell. Next this piece is made pliable and soft for bending by boiling in a mixture of salt water and coconut milk. This is done in a shell (ammöt, given by Elbert as trochus) placed over a fire. When pliable, the piece is removed and bent in a circular shape with a slight overlap; a split stick is fitted across the overlap and the split ends bound together, thus holding the piece in shape until it cools.

These arm bands (fig. 116) were made by men and worn by women, particularly young women, when dancing. A band was worn about either arm, just above the wrist. Larger bands were also made for the upper arm.

Ear Ornamentation

Piercing the ear In former times the ears of both boys and girls about the age of twelve were pierced in two places--through the upper rim, and through the lobe of the ear. The hole made in the upper rim (akkyk) remained small, but the lobe was stretched until it reached in some cases almost to the shoulder. The large hole thus formed was termed pwangan sening. The piercing was done by means of small round collars of coconut shell; these were cut in one place, pulled apart, and clamped on over the ear, being left in place until the sharp ends had worked their way through the flesh. As one informant expressed it, the collar eats (möngö) its way through the ear. In the case of the small hole in the upper rim of the ear, only one such collar was used to make the hole, the collar then being left in place to prevent the hole from closing up again. A larger initial hole was made in the lobe of the ear by utilizing a number of collars bound together to function as a unit. The resulting hole was then gradually enlarged by the insertion of progressively larger roles of pandanus leaves; the roles were changed every few days over a period of two weeks or more until the

lobe had been stretched to the required size.[1]

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1. The above description of piercing and enlarging the earlobe was supplied by informant Kekkin on Romonum Island. Kramer (1932: 101-3) gives a somewhat different account whereby the initial hole is made in one operation by cutting through the lobe with a sharp piece of mussel shell, after which the hole is enlarged by the insertion of roles of leaves. The informant stated that this method was also used.

Coconut shell collars The ornaments suspended from holes made in the ear consisted largely of various combinations of coconut shell collars and shell discs. The coconut shell collars (söök) were made from the same material as the small beads (föycöön) used in the woman's belt (kin), but were larger, averaging 1 in. in diameter, and consisted of a circular band averaging 1/4 in. in width. A particular kind of coconut, characterized by a comparatively thick shell, was used to make these collars. A nut that had fallen to the ground and commenced to sprout was preferable. The nut was husked and cut in half on the transverse axis, only the half having two eyes at its end being used. Two triangular sections of shell were cut out with a knife, each section having one of the two eyes at its apex. These sections were then trimmed to a roughly circular shape with

a knife. Informants thought that a sharp piece of shell or stone was used for this purpose before the introduction of steel knives. Some informants maintained that the point of a knife (or a pointed shell or stone instrument) was then used to peck out a circle in the center of each section, the center then being removed and thrown away. Other informants stated that the pump drill (nikanen) was used to drill out the center part of each section. Whatever the method actually used, the inside circumference of the collar was ground and smoothed down with a piece of branch coral (ään) after which the outside circumference was rounded and smoothed down by rubbing on a piece of coral, sosomai. For the latter operation, a number of collars were fitted on the end section of a stick and ground down all at the same time.

These collars were fastened together in long strings which were suspended through the enlarged part of the ear-lobe. The individual collar was cut through at one point along its circumference, so that it could be pulled apart and a second collar inserted, much as the links in a chain. The natural tension of the shell kept the pieces from coming apart. Various designs were often incised (amakkena) on the outer circumference of these collars, using the sharp edge of a kind of shell (nomonum) after which the surface was rubbed over thoroughly with yellow turmeric powder (teik); the surface was then wiped off leaving the incised lines in yellow.

Shell discs Shell discs were made from a conical, spiralled shell (kiinyn), called by Kramer a conus shell. A pointed stone was used to peck around the circumference of the shell near the base, so that the conical top part could be discarded; the flat, circular piece thus obtained was ground down on a basalt boulder until the middle part became thin enough to be removed by pecking with a sharp stone. Large discs of this kind, 3 in. in diameter, were suspended from the strings of coconut shell collars hanging from the ear, so that the discs rested flat against the chest. These large discs were termed kiinyn or mäc. Smaller discs, made in the same way, were attached to the upper hole in the ear by means of a small coconut shell collar. A single such disc attached in this way was termed neniinyk; a string of such discs, tied together with hibiscus fiber line, was termed nikimmwetär.

Coconut shell and conus shell ornaments were worn suspended from the ear by both sexes, although men apparently tended to wear a greater number and variety of these objects.

Neck Ornamentation

Necklaces The general term for a necklace or head band is mwaremwar, referring to an object composed of flowers and herbs as well as one composed of shell beads and other worked materials. The latter category of necklaces was made

up largely of combinations of red and white shell beads, and coconut shell beads, strung on hibiscus fiber lines. Mangrove bark beads were seldom used on necklaces as they often broke and were thus easily lost. Informants on Romonum Island were able to name and describe several standardized combinations, but stated that in many cases necklaces were made up by individuals, using the standard materials, but arranging them to suit the taste of the manufacturer. The red shell beads (fö̈yppar) and white shell beads (fö̈yppwec) used in these necklaces were for the most part traded in from outside the Truk lagoon. Necklaces were worn by both men and women, either single, doubled, or tripled.

A necklace made up entirely of red mussel shell beads (fö̈yppar) was termed ȯsȯng. The term amoc was applied to a necklace made up of three longtiudinal lines strung (faateni) with red and white shell beads and black coconut shell beads; at intervals transverse lines, also strung with beads, intersected the longitudinal lines.

Finsch (1893: 613) describes a more standardized type of necklace in the following words: "Tschä̈kpalap, necklaces consisting of black, polished rings from cross-sections of a special kind of coconut, constituting a compact ring chain 54 cm. long, which in appearance resembles a snake. The middlemost ring is the widest one; the outermost one at each end is somewhat narrower, and all the rings from the middle to the ends slope as uniformly as if they

were turned from a single specimen and then cut through. The whole chain consists of 105 such rings, which on the backside, by means of fine, yellow colored twine (from hibiscus fiber) are plaited in an extremely ingenious and neat manner on a thicker cord of coconut fiber which is drawn through on the inner side of the rings, and is thus covered by them. On the ends of the cord, about 6 cm. long, which are used for tying, black coconut pearls and red spondylus discs are alternately strung." Informants on Romonum identified this type of necklace as ǒǒjippa, but were unable to give details of manufacture. A specimen answering this description was examined briefly at Bishop Museum (Specimen #3319). The coconut shell rings were found to be the same as those made for suspension from the ear (sǒǒk). In this case, about 146 such rings were strung side by side on a foundation consisting of a flexible strip of wood or reed 1/8 in. wide and 1/16 in. thick. The rings at either end averaged 1/2 in. in diameter and those in the center 3/4 in. in diameter. The rings were fastened individually to the foundation piece by a braiding technique which was not recorded at the time the specimen was examined.

Pendants Pendants were made of turtle shell, red and white shell, coconut shell, wood, etc. Like necklaces, their composition often varied with individual taste. Informants were able to describe several standardized types, however.

A single, triangular piece of mussel shell was strung on a plain hibiscus fiber line, through a hole drilled in the apex, and worn high up on the chest. Instead of a plain line, shell beads were sometimes strung along the length of the line by way of variation. This type of pendant was termed föyjeföy.

A small oblong coconut shell with the husk removed was worn as a pendant, termed pöörenfäänу. The shell was polished by rubbing on a kind of coral (sosomai) after which a hole was drilled in one end and the shell suspended on a hibiscus fiber line. This type of pendant could also be worn double, i.e., one in front and one behind.

Pendants of turtle shell (pwocen pwäpwä) were termed pwöcou. These pendants were prepared in a manner similar to that described for turtle shell armbands (nikum) although in this case the shell was not heated for bending. A simple, round pendant, up to 7 in. in diameter, was made by cutting out a piece of shell with the shark's tooth instrument, making a small hole near the edge, and stringing on a hibiscus fiber line. These round disc-pendants were also worn double, i.e., one in front and one behind. Circular turtle shell pendants were also carved with intricate designs, similar to scroll work, using the shark's tooth instrument to cut out the designs. Informants stated that this type of work was done on Truk, although the Puluwat Islanders were considered the best workers in turtle shell.

Head and Hair Ornamentation

Hair styles Formerly, both sexes allowed the hair to grow long. The hair could be gathered on the back of the head in a bun by both sexes, a style termed ryyt. Women sometimes wore the hair in a bun over the forehead in order to protect the eyes from the sun while fishing. Women also arranged the hair in a braid on either side (pitimökyr) or allowed it ot fall loosely over the shoulders and down the back, öpongumöng. For warfare, men gathered the hair up on top of the head, holding it there by means of a braided head band, this style being termed pitinnyk.

Woman's head band The woman's head band (nimwam) was worn well down on the forehead and was used at dances and other festive occasions. The piece is made up of a base, or foundation, 20 in. in length, 1 1/4 in. wide, and 5/8 in. thick. This base is made by combining thick bundles of hibiscus bast fiber in a three-ply braid, on the top, or outer, side of which is placed a folded pandanus leaf strip of the same length and width as the base.

Base and leaf strip was held together as a unit by hibiscus fiber thread (two-ply) which is dogged the length of the piece. Small-diameter coconut shell and mangrove bark beads are strung on the thread, where it repeatedly crosses the outer side, i.e., over the pandanus leaf (fig. 120). These beads average 1/8 in. in diameter and are strung

close together, so that the outer side of the piece is practically covered with these black beads.

At either end, the hibiscus fibers are carried out in a three-ply braid to form two strings for tying purposes. The piece is bent in a circular shape, the ends tied together, and the piece placed on the head.

Man's head band The man's head band (nakasäka) was one of the most valued of ornaments, and according to the literature it evidenced perhaps the finest workmanship of any item of ornamentation. The piece was made by men and worn by men at dances and also, according to Romonum informants, when going out as a war party. The nakasäka was rubbed thoroughly with yellow turmeric powder (teik) and was wrapped in pandanus leaves and stored in the wooden chest (sop) when not in use.

The piece consisted essentially of a base, or foundation, of warps, on which were knotted closely-spaced tufts of banana fiber; the tufts were all cut off even to form a sort of nap, and the ends of the warps then braided out to form two strings, or tails, for tying purposes. The warps were up to ten or more in number and were stretched on a frame (pwiison) which, as figured by Kramer (1932: 102, figs. 63, 64), consisted of either a forked stick or four separate pieces lashed together in a rectangular pattern. Individual tufts of banana fibers were then knotted on these

warps, the technique on a specimen examined at Peabody Museum Harvard (# 55751) being that shown in fig. 117. The nakasäka was worn across the crown of the head, the end braids being passed around the knot of hair at the back of the head and tied together there in a square knot. It was usually worn in conjunction with the ornamental comb (täf).

Braided head band A head band termed ɔcop or eytyn, was worn by both sexes when dancing. This band was braided four-sided from hibiscus fibers and was wrapped twice around the head. The term eytyn was also applied to the braided sling used in warfare. The latter was occasionally worn by older men, wrapped around the head with the pouch placed over the occipital area; it was not, however, an ornament to be worn at dances.

Man's hairpin with attached necklace The man's hairpin with attached necklace was termed jöpös, although a separate term (picicop) was used for the necklace part. The piece consisted of a circular shell disc, solid throughout, in the center of which was a small hole for the insertion of a wooden stick pin. This pin was thrust upward through the knot of hair at the back of the head such that the disc rested tight against the underpart of this knot of hair, the pin being kept in position by the pressure of the headband (nakasäka) which was tied on over the upper end of the

pin. A necklace of shell beads was attached at the juncture of the wooden pin with the shell disc.

The shell disc was made from the base of a shell termed kiinyn (given by Kramer as conus shell) in the same manner as described for the manufacture of shell ear ornaments (kiinyn or măc). In this case, however, only a small hole was made in the center of the disc, of a diameter such that the end of a mangrove wood pin 6 in. in length could be forced into it.

The necklace (picicop), about 2 1/2 in. in width, was made by stringing shell beads on a series of hibiscus fiber lines. The lines consisted of a set of warps (wassan) and a continuous weft (ifan). The weft was passed back and forth across the warps, warp and weft being knotted together at every other crossing. The beads were strung during the process of knotting warp and weft together.

Wooden combs Plain wooden combs, the generic term for which is cy, were worn by both sexes. These combs were used to dress the hair and were also worn stuck in the knot of hair at the back of the head, as ornamentation. They consisted of a handle (acen) and a varying number of prongs (oÿtyn), averaging from four to eight in number. The material used was usually mangrove wood (cia), the comb being fashioned either from a single piece of wood, in which case the piece was termed cyyppac, or from a number of elements

fastened together with transverse pins of wood, in which case the piece was termed cykkamas (cykkein in eastern Truk). (See fig. 118).

In some cases the handle was given a round or rectangular shape and collars of coconut shell and white shell were cut to the same shape and forced down over the handle.

These wooden combs were also used with ornamental feather attachments, in which case they were worn only by men, usually at dances. A feather ornamentation termed täf consisted of the tail feathers from the wild cock (cuko) or, occasionally, the feathers from a large sea bird, ǒǒmǒ. These feathers, from one to ten or more in number, were fastened directly to the handle of the comb by bending the end of the quill to lie flat along the longitudinal axis of the handle, and lashing with hibiscus fiber line. According to informants, combs ornamented in this manner were worn by young men at dances, the prongs of the comb being stuck in the knot of hair (ryyt; the headband (nakasäka) was tied in place over the prongs, thus helping to hold the comb in position.

A somewhat more elaborate feather attachment was made from the wing feathers of the frigate bird, aasaf. In this case the individual feathers were fastened to a thin stick of mangrove wood which in turn was lashed to the handle of the comb. This ornamentation was termed epico. (See fig. 119). Informants stated that men often captured small

frigate birds, keeping them in captivity until the feathers were of a sufficient size to be used.

Down feathers (engir) were obtained by cutting away the skin from the breast of a large sea bird (ööm̈ö); this skin, with attached down feathers, was dried and then wrapped about the junction of tëf or epico with the comb handle, where it was secured with lashing of small-diameter hibiscus fiber line.

Kramer (1932: 99-100) shows numerous sketches of all types of combs and attached feather ornamentation.

Painting and Tattooing

Body painting Formerly, both sexes made extensive use of yellow turmeric powder (teik) as a means of decorating the skin. For dances and festive occasions a variety of marks were made on the face; in these cases the yellow powder was applied directly to the skin, body sweat acting as a lubricant, so that the color was quite noticeable.

Yellow turmeric powder was also mixed with unscented coconut oil (nöön taka) and applied to the entire body. Informants on Romonum Island maintained that both sexes kept the skin well lubricated with this mixture in order to avoid skin rash, pimples, itching, etc. After washing the body, a fresh application of the mixture was applied. In this case, it appears that the mixture was used less as a form of ornamentation and more in the nature of a skin lubricant.

Tattooing The process of tattooing (makkei) was done by men and was formerly found to a considerable extent on both men and women. Informants estimated that native methods of tattooing ceased on Truk at about the beginning of the Japanese administration of the islands. Arms, hands, and thighs were the areas on the body most often tattooed. Informants stated that the tattoo functioned only as an erotic stimulant; they could give no instances of special territorial, kinship, or status markings. The erotic factor was elaborated by one male informant who stated that the tattoo marks visible on the thighs and buttocks of a woman when she removed her wrap-around skirt always excited him greatly. He commented on the fact that the women of Mortlock tattooed these areas to a greater extent than did the women of Truk. The age at which tattooing was done varied from about fifteen to thirty.

The tattooing process is termed makkei. The individual marks (mak) were made by means of a tattooing instrument, ninnätit. This instrument was made from the bone of a frigate bird, one end of the bone being filed to form three or four sharp points. The bone was then lashed at right angles to the end of a short stick. The pigment was made by boiling breadfruit sap (appacen mäi) in one half of a tridacna shell (siim), the smoke and soot from the boiling sap being collected on the other half of the shell. The soot was scraped off and mixed with a small

amount of water. The paste-like pigment was applied to the skin with a palm leaflet midrib. The points of the tattooing needle were then placed on the pigment and the needle tapped lightly and repeatedly with a stick. Pounded leaves of Ipomoea digitata (jeteniten) were then mixed with water and rubbed over the tattooed area; this was stated to fix the pigment so that it was not easily rubbed off.

Scarification Scarification was, and still is, practiced by young men who desire to prove their love to a sweetheart. The operation, termed nekenek, consists in making one or more cuts on the arms or chest with a knife (formerly a sharp piece of shell). In some cases these cuts are rubbed with the sap from the skin of a papaya so that the wound heals slowly and a scar is formed.

During coital foreplay either partner may scratch the other on the side of the neck or on the buttocks with the fingernails, this practice being termed nömuti. Under the same circumstances the glowing end of a cigarette butt may be used by either partner on the arms or chest of the other, practice termed kek; formerly the glowing end of a coconut leaflet midrib was used in the same way, the process then being termed niköpwöt.

WEAPONS

Introduction

The chief weapons of warfare used on Truk were spears, clubs, and slings. Warfare, carried on among the various islands within the Truk lagoon, was once widespread; the introduction of firearms, and the encouragement of their acquisition and use by early Japanese and English traders in the area, led to an intensification of the warfare pattern. The German administration, however, in pursuance of a policy oriented toward the development of the copra trade, confiscated all firearms and thoroughly discouraged any warlike proclivities on the part of the Trukese. The old types of spears, clubs, and slings are no longer manufactured and authentic specimens are for the most part unobtainable. The older men, however, still remember the techniques of their manufacture and use.

Spears

Plain spears Plain spears, round in cross section and narrowing to a point at either end, were made of coconut palm wood and mangrove wood. Those made of coconut wood, and termed sines, were fashioned with some care and were consequently retrieved and used over again whenever possible. This type of spear was identified by Romonum informants as identical with those figured by Kramer (1932: 157, fig.

125 a,b,q,r.). It reached twelve feet or more in length, and was fashioned from the heart wood of a mature coconut palm, using the straight-edged adze, tikkötik. One informant on Romonum stated that coconut wood is considered superior to mangrove for most spears because it dries and becomes hard like mangrove but does not tend to break as easily as the latter. After being rough-hewn with the adze, the spear was fined down further by scraping with a small bivalve (nittum) and polished with a piece of pumice stone, piito. A further polish could be added if desired by rubbing the wood with emeniwe, a kind of sea sponge.

The sines type spear was thrown with one hand by grasping in the center section, in the manner of a javalin. It was also utilized for in-fighting, if need be, by grasping with both hands and thrusting with either pointed end. In some cases a length of coconut fiber cord was dogged about the center section as an aid in grasping the spear.

The mangrove wood spear (porosäp or eittöwön) was apparently identical in shape and size with the coconut wood sines, but was fashioned from aerial prop roots of the swamp mangrove and used in a rough and unpolished state; consequently it was not generally retrieved after throwing.

Barbed spears The general term for a variety of barbed spears is wökurum (from wök, a possessive classifier for spears, clubs and canes, and rum, meaning barb or projection).

A few of the spears figured by Kramer (1932: 157, fig. 125 l and m) were identified by informants on Romonum as of this type. According to these same informants, wökurum were made in various lengths up to ten feet or more, and were made of either mangrove or coconut wood. They narrowed gradually to a point at one end and a series of barbs were carved in the wood along this end section. The shape and arrangement of the barbs varied a great deal. These spears were either thrown in the manner of a javalin or used for thrusting and jabbing in close in-fighting.

Plain spear with sting ray tails attached This type of spear, termed niauppwec, was widely used due to the severe wounds which could be inflicted by the finely-barbed sting ray tail, mäcey. Kubary (1895: 57) says concerning these ray tails: "The fear of being wounded by the spine of the ray is quite general on the Caroline Islands, and consequently this is used, on all the islands, for the most dangerous spears. On Mortlock, Truk and in the west, it is used as a thrusting lance, or is used for an assuredly successful throw at very short distances."

The body or shaft (wassan) of this spear was fashioned from coconut wood in much the same shape as the sines spear although only one end was pointed. The spear was round in cross section and attained a total length of ten or more feet. Barbed sting ray tails were attached toward the pointed

end of the shaft at varying intervals. This attachment was made by first lashing the ray tail to the shaft and then covering this lashing and the lower part of the tail with a cement-like compound (pwec) obtained by a process of calcining and air-slaking a certain type of coral (see "Chemical Industries"). This compound was applied in a paste-like state and allowed to dry in the sun, the result being a series of characteristic hard, knob-like projections along the body of the spear. The ray tails were attached in pairs or singly; in other cases a single tail was attached at the very end of the spear, in which case the spear might be designated by the term mesaamen (tip-thing). (See fig. 121).

Light spear A light spear (nikappis) was made from äsät (Miscanthus floridulus) with a shaft about five feet in length and with a sting ray tail lashed at one end. This spear was used in warfare, and was thrown ordinarily with the index finger of the right hand on the butt end, and the body of the spear supported by the other hand.

According to Romonum informants this spear could also be thrown by holding a flat piece of wood approximately the shape of a twelve-inch ruler in the left hand and launching the spear with the right hand in such a way that it glanced up and off the stick, thus adding height and distance to the throw. These informants gave the term kackönön or anaanong for this auxiliary stick. Kubary

(1895: 58) mentions what he calls a throwing stick (katkonol) in connection with his description of a composite spear (mezau) but gives no information other than the mere mention of the term. It is probable that the description of the kackȯnȯn obtained on Romonum refers to what Kubary termed a throwing stick (Wurfstock).

Composite spear The Trukese apparently utilized a composite spear made by lashing together a separate shaft and pointed end piece. Such spears are mentioned by Kubary (1895: 58) who refers to them as mezau. According to this author, mezau were made from light and worthless material and were not retrieved after the throw. The shaft, 1.50 to 2 meters in length, was of a light wood and on one end of the shaft was lashed a hard point of barbed or notched coconut wood. Kubary says that this spear was thrown by hand, the lower end resting on the index finger while the body of the spear was supported by the other hand. According to Kubary, these spears were also thrown with the aid of a throwing stick (Wurfstock) which he terms katkonol. As mentioned above, these sticks are said by Romonum informants to have been used in conjunction with the light spear (nikappis).

Informants on Romonum disagreed on the existence of a composite spear. Informant Simiron gave the term mäcey (referring to the barbed tail of the sting ray) for a composite spear having two types of pointed end piece--either a plain

wooden end section with a sting ray tail attached at the distal end, or a notched and barbed wooden end section without the sting ray tail. In either case the shaft (wassen mäcey) was made of coconut or hibiscus wood and averaged approximately 5 ft. in length while the end piece, of mangrove wood usually, averaged approximately 1 1/2 ft. in length. The two parts of the spear were joined by overlapping slightly and wrapping the overlap tightly with coconut fiber cord. These spears were used in warfare and were thrown by hand, the lower end resting on the index finger while the body of the spear was supported by the other hand.

Other informants on Romonum denied altogether the existence of a composite spear, but the fact that such a spear is mentioned by Kubary, plus the fact that one informant could give a description of it, argues for its probable use by the Trukese.

Slings

Although slings are today occasionally used for sport, they have all but disappeared on Truk since the suppression of warfare by the German Colonial Administration. That they were once in wide use is attested by the literature and also by the many stories told today of the prowess of certain warriors and in particular of their skill with the sling.

The Trukese sling (eytyn) was essentially in the form of a middle pouch with a string at each end and a hand loop in the end of one of the two strings. The sling most used in warfare on Truk was not, however, manufactured on Truk, but was traded in from the nearby islands of Nama and Losap. This was stated to be the case by informants and checks with the literature. Finsch (1893: 317-18) describes this sling as composed of two four-edged cords of coconut fiber, each of which is in turn composed of sixteen strands. The two cords are attached to a middle pouch, also of coconut fiber cord, in the form of a compact wicker-work. Finsch quotes Kubary to the effect that this type of sling was traded in from Nama and Losap and states that he himself obtained such slings which were designed for trade, i.e., in their original packing of pandanus leaves. He adds that the Mortlock sling is identical with that found on Nana and Losap. Kramer (1932: 159-60) confirms this and adds Fananu (Nomwin) Island as another source of supply.

The slings manufactured by the Trukese themselves, according to Finsch (Ibid: 317-18), were made from hibiscus bast fibers by a quite different technique of braiding, and the pouch, instead of being in a compact wicker-work form, was composed of seven to ten separate cords running compactly side by side.

The difference in material and technique between Trukese-made slings and those traded into Truk from nearby

islands was also mentioned by informants on Romonum. They were unable to describe or reproduce the techniques involved in making the latter, but it was possible to get sample specimens, and demonstrations of use, of the former. The latter type, i.e., of coconut fiber cord, is, however, the one found most often in museums.

To make the braided hibiscus sling the worker sits and works with a bundle of individual strands of hibiscus bast fiber, each strand being about three feet in length. The work commences in the center of the bundle, at a point which will become the pouch (nenien kupen; from kupen, sling stone, and nenien, place of). The pouch is made by braiding, with a three-ply braid, from seven to twelve separate cords, called tetten, each ply being made up of a number of bast strands. The braiding is done by loosely tying the distal end of the bundle about the outstretched foot, the braiding then proceeding in the direction of the body. To fix temporarily the commencement of these braids, a piece of hibiscus wood is partially split, fitted over the width of the bundle, and clamped down tight on the bundle by lashing the split ends. Or two separate pieces of wood may be placed across the bundle, one above and one below, and lashed at either end. A clamp of this type is termed ŏmŏŏcyn.

The tetten are braided to a length of 7 in. and the end of the pouch nearest the worker is then fixed permanently

without making use of a clamp. This is done by utilizing a line composed of three or more strands of hibiscus bast which have been left free on the left (as the worker faces) during the above braiding process. This line is passed from left to right two full turns about each of the braided tetten, and is then brought back underneath, making a full turn, between each of the tetten, about the standing line. The line may be passed back and forth in this manner a number of times until the tetten are thoroughly fixed in place. (See fig. 122). What is left of the line is later braided into the rest of the sling.

The work is then turned around and the same process repeated for the other end of the pouch, using a line left free on the right side in the braiding process. The wooden clamp is not removed during this operation.

A second wooden clamp is now placed on the other end of the pouch and the work of braiding the two strings of the sling commences. The clamps are used to keep the ends of the pouch in their original shape, since considerable pull is exerted on them during the ensuing braiding. The distal end of the bundle is tied about the foot and the braiding begun on the side of the pouch nearest the worker. The entire bundle is divided into three plies and the braiding done by a simple alternate crossing, first from the right, then from the left, twisting each ply slightly in a direction opposite to the natural direction of twist, before

incorporating it in the braid. Since a large amount of bast is involved in this operation, a number of strands are left out of the braid at intervals and later cut off, with the result that the string gets smaller toward the end. The bundle is reversed, and the other string is braided in like manner.

A hand loop is made in the end of one string by twisting, or rolling, a number of fiber strands on the thigh beneath the palm. In this manner two two-ply twisted lines are made which are knotted at their ends to form a loop through which the hand may be passed.

In use, the hand loop is fitted around the back of the right hand and the other end of the sling is grasped in the same hand. A stone is fitted in the pouch, and with the left hand the sling is extended its full length in front of the body, pointing toward the object to be hit. The left hand then releases the sling at the same time that the slinger commences to whirl it rapidly clockwise. The slinger takes a stance almost at right angles to the target and whirls the sling approximately on the level of the upper arm, with a wrist movement. It is released with an underhand movement, by letting go of the one end; the hand loop prevents the sling from going the way of the stone.

Almost all the reports of early visitors on Truk mention the fact that men wore these war slings wrapped about the head as a kind of ornament and also in order to have one handy in case of trouble. Romonum informants stated

that older men sometimes wore the true war sling (eytyn) in this fashion, with the pouch resting against the occipital area. Somewhat similar was an ornamental head band, termed eytyn or ócop, which was worn by both sexes when dancing. In this case the band consisted of a long, four-sided braid of banana fibers, wrapped twice around the head.

Sling Stones

Sling stones (kupen) can be picked up in fairly large numbers on any of the high islands. They are almost uniformly of an elliptical or egg shape, varying only in size. The usual material is a piece of soft, weathered basalt which has been shaped by rubbing on a hard, basalt boulder. Informants stated that projectiles were sometimes made by moulding with the hands a mixture of breadfruit sap (appac) and a reddish kind of soil, appar.

Sling Stone Carrier

A net-like carrier for sling stones (mear) was made from small-diameter coconut fiber cord by a process termed fööum. The mouth of this container could be closed by means of a shirr string arrangement. The technique of making this carrier was unobtainable on Romonum.

Clubs

The prime weapon for hand-to-hand fighting was the club, the general term for which is niföttöföt; nippwei

or nippweippwe were also given. They were made of Thespesia populnea (pönö), or mangrove, cia. The finest clubs were made of the latter wood and highly polished. They were made in various lengths, ranging from about 2 1/2 ft. to 15 in., but features which make for terminological differentiation seem to be found on long and short clubs alike.

Plain clubs Plain, un-serrated clubs are termed cia periper. Kramer (1932: 158, fig. 127b) shows a plain two-edged blade with a median longitudinal ridge front and back. It tapers to a blunt point at the tip end and at the bottom end grades into the shaft with no shoulder. The shaft is approximately equal to the length of the blade and at its butt end tapers to a blunt point. In fig. 127a, Kramer shows a two-edged blade with a similar median longitudinal ridge front and back, and with the tip end bluntly rounded. Near the tip end is a ridged flange and a similar flange marks the gradation from blade to shaft. The shaft in this case is approximately twice the length of the blade, and is likewise two-edged with a marked median ridge front and back. At a slight distance from the butt end there is a flange which tapers gradually to a sharp point.

Serrated clubs Serrated clubs are termed camweiny. They are characterized by a fairly narrow, two-edged blade with median, longitudinal ridges front and back. The blade is

laterally serrated, the serrations being single and varying from closely spaced to only a few in number. There is usually a marked shoulder flange. The shaft varies from two-edged to round in cross-section and is in general equal to the length of the blade. At the butt end of the shaft there is usually a flange point and occasionally, projecting barbs are spaced along the butt end section.

Kramer (1932: 158, fig. 127 d, e) shows widely-spaced serrations with transverse ridges intersecting the median ridges front and back. The tip end of the blade is bluntly pointed. Along the median ridges, front and back, are a series of projecting double-pointed barbs, one for each serration. The bottom serration narrows abruptly to a notched shoulder flange. The shaft remains the same diameter down to the butt end, where a four-pointed flange is cut around the pointed end of the shaft.

Fig. 127 f,g (Kramer) shows a strongly-serrated blade with a pronounced median ridge front and back. The blade is set in a two-pointed collar, from which the shaft narrows gradually until toward the butt end a series of barbed notches project in all directions. The butt end widens and then narrows abruptly to a blunt point.

All clubs mentioned above as figured by Kramer are shown in fib. 123.

Bow and Arrow

A small bow, somewhat similar to a cross-bow, is described under "fishing." It does not appear, however, that this instrument was ever used in warfare.

Knuckle Duster

For hand-to-hand fighting in war, and also for personal defense at any time, the shark's tooth knuckle duster (nikkumuc) was indispensable. According to informants, the core of this weapon was always made of coconut fiber cord in the old days. Specimens were collected, however, which had wooden or wire cores as well as sennit cores.

A specimen collected on Udot Island has a core made up of a single length of flexible reed or wood, 1/8 in. in diameter, bent twice to form a double circle (fig. 124). In this specimen, eight teeth are arranged along the top of the circle. The teeth are kept together as a unit by virtue of having been removed along with some of the adjacent cartilage. This latter is set down between the two turns of the core so that the base of each tooth comes flush with the top surface of the core. The core is then dogged with cord and wire, including the interstices between the teeth.

A second specimen, also collected on Udot Island, has a core made in the same way as described above. In this case, however, the teeth are lashed on individually in pairs--

eight such pairs on this particular specimen. (See fig. 125). The teeth are held in place by passing a thread transversely, through a small hole drilled in the base of each tooth, the thread in turn passing continuously around the core. In addition, a longitudinal thread passes between all paired teeth, crossing the transverse lines just mentioned. Finally, the entire core is dogged with heavy cord including the spaces between pairs of teeth, the cord passing over the longitudinal line in each case.

RECREATIONAL AND CEREMONIAL OBJECTS

Dance Rods

A dance formerly performed by men, termed tukijä, required the use of wooden dance rods, gurugur. The name for these rods stems from the fact that they are usually made from the wood of wild orange, gurugur. The dance was performed by two opposing lines, either sitting or standing. Each man was equipped with a dance rod, the object being to move the rods in time and according to set patterns, the rods of each pair of opposing performers striking together according to a definite rhythm. Orange wood, when dry, has a certain resonant quality which served to accent the rhythm.

The rods were cut to lengths of about 4 1/2 ft., the average diameter being about 1 1/2 in. The diameter usually increased toward the center section, which was painted black and incised with various geometrical designs. The two ends usually flared slightly and were cut off straight. (See fig. 126).

Love Sticks

According to Kramer (1932: 316-17) many Trukese men possessed a "love stick" (felai), that belonging to each individual being carved on the end in a unique manner. These sticks were carried about during the day so that the women became familiar with the appearance of different

sticks belonging to different individuals. If a girl or woman was casually or secretly shown one of these sticks, she would then know that its owner intended to pay her a visit during the night. The lover would then approach the dwelling of his sleeping sweetheart, thrust the stick through the thatching and awaken her; she would recognize the stick and thus its owner, and by pulling or pushing on the stick, signal him to come in or go away.

Informants on Romonum confirmed the above story in outline. The sticks (fänei) were made and used only by men, beginning at about seventeen years of age. They were used only in connection with love making and never as personal weapons. These informants stated that before the introduction of steel knives, a plain, uncarved stick was used. It appears that a point was made of having the intended girl see the stick sometime during the day as a kind of sign that the owner would come to her later: but informants seemed vague about the ability of women to recognize a particular man by the carving on the stick. It is more likely that liaisons were carried on fairly regularly between the same couple, the stick being used merely as a sign during the day, and as a means of waking the girl at night, whereupon she could signal her intentions by pulling or pushing on the stick.

Romonum informants were able to produce model specimens of these sticks (fig. 127).

Nose Flutes

A nose flute (aangyn) is still made, using an aerial prop root of swamp mangrove. A straight section of root about 3 ft. long is selected and the outer bark is cut away for a few inches in from either end. The pith core is removed by twisting, leaving a hollow shell of mangrove bark. A flat, circular piece of coconut meat with a small hole through the center is then inserted at one end of the bark tube, the meat becoming hard on exposure to the air. The flute is held out to the right of the player, the left index finger pressing on the right nostril, thus forcing the air through the left nostril. The body of the flute may be fitted with a number of holes and the tone varied by stopping these holes with the fingers. These flutes are not used in conjunction with singing but are used mainly to play the tunes of well known love songs, engi.

Shell Trumpet

Trumpets (sewi) are made from large conch shells and from triton shells. The blowing hole is made on the side, an inch or so in from the small end, by pecking with a sharp piece of basalt and filing with a piece of branch coral. The hole is made about 3/4 in. in diameter. A hole may be made at the edge of the large aperture and a short length of coconut fiber cord tied through it for carrying and hanging purposes.

These trumpets are used to call the people together for meetings, emergencies such as war, etc.

Receptacle for Spirit Offerings

The literature on Truk contains numerous references to what is usually termed a "spirit canoe", used as a receptacle for spirit offerings. Although these objects, termed nän, have long since fallen into disuse, informants on Romonum were familiar with them and informant Kinôus produced a sample specimen (fig. 128).

In former times, nän were suspended from the ridge-pole in most men's houses, wuut. They were equipped with a rope arrangement and could thus be lowered so that various offerings, consisting of flowers, herbs, shell ornaments, etc., could be placed on them. A dance rod (gurugur) was often laid across the receptacle and the offerings hung from the ends of this rod.

The nän was shaped from a single section of a bread-fruit tree trunk. It attained a maximum length of about 5 ft., and consisted of a central bowl-like receptacle on either side of which was outlined in profile the hull of a sailing canoe, meniyk. Kramer and Kubary both interpreted this to indicate the existence in former times of a double canoe on Truk. Romonum informants agreed that the form of the nän does indeed contain an indication of two meniyk hulls, but they appeared to have no conception of these

hulls being combined to function together as a double canoe. The question of the existence of the double canoe on Truk thus remains undecided.

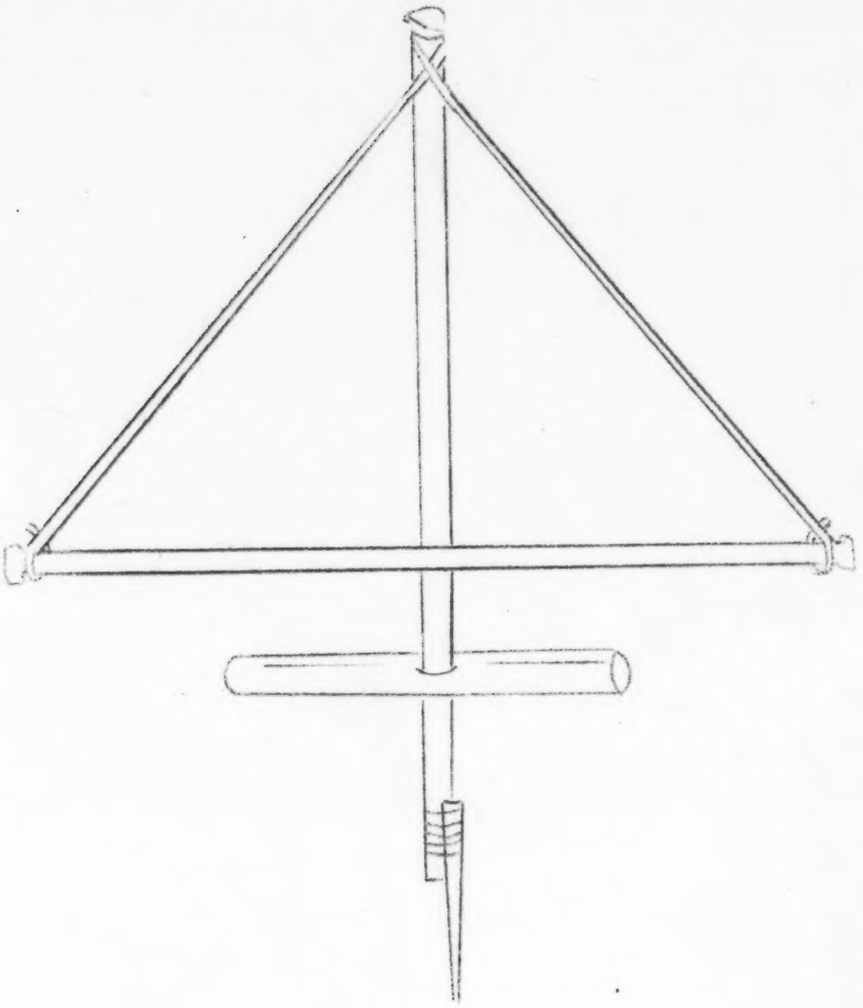


Figure I.--Pump drill (nikanen). Length of shaft, 28 in. Diameter of shaft, 3/4 in. Length of hand bar, 21 in. Length of drill, 3 1/2 in.

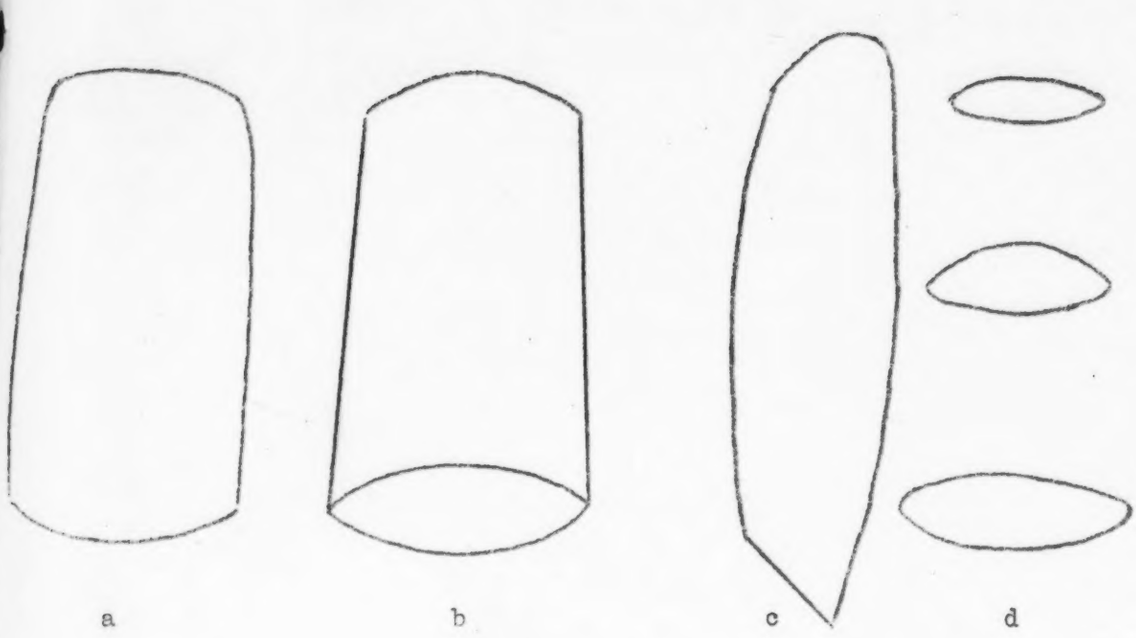


Figure 2.--Quadrangular adze blade (tikkŏttik). a, Front view. b, Back view. c, side view. d, Cross-section. Average length, 4 1/2 in. Width at butt, 2 1/4 in. Width at blade, 3 1/4 in. Greatest thickness, 1 in.

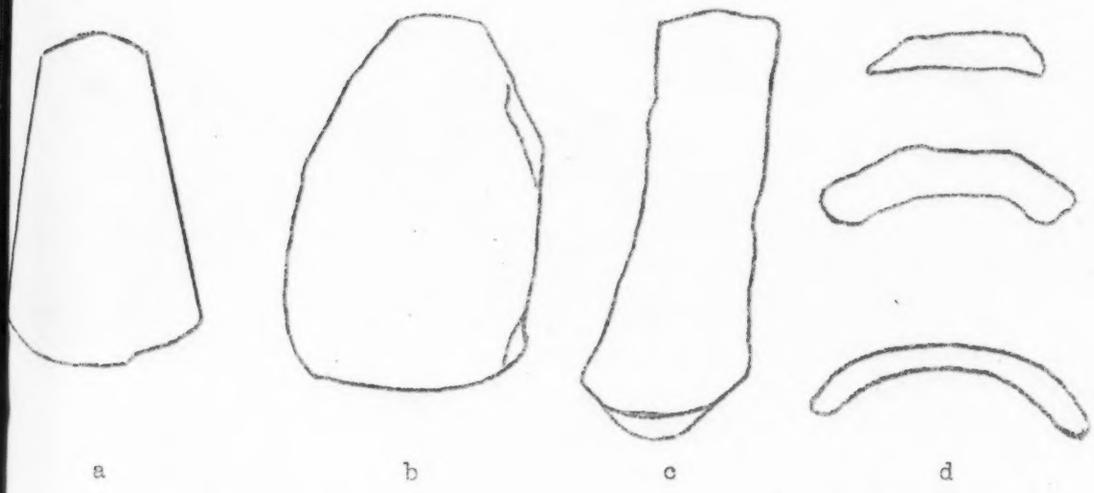
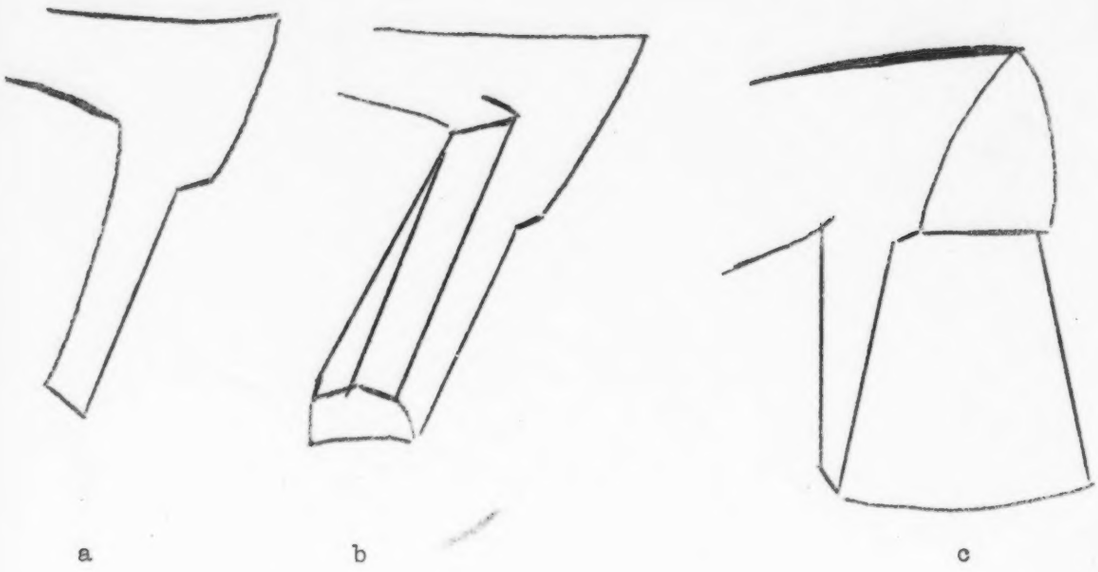


Figure 3.--Spout or canoe adze head (sene kuun). a, Front view. b, Back view. c, Side view. d, cross-section. Average length, 3 1/2 in. Width at butt, 1 1/4 in. Width at blade, 2 1/4 in. Greatest thickness, 3/8 in.



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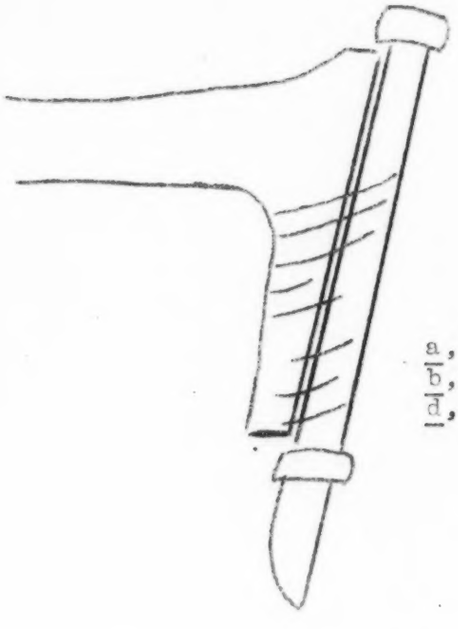

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Figure 4.--Adze hafts (imwen sene). a, Quadrangular adze haft, side view. b, Same, underside. c, Same, end view. d, Spout or canoe adze haft, side view.

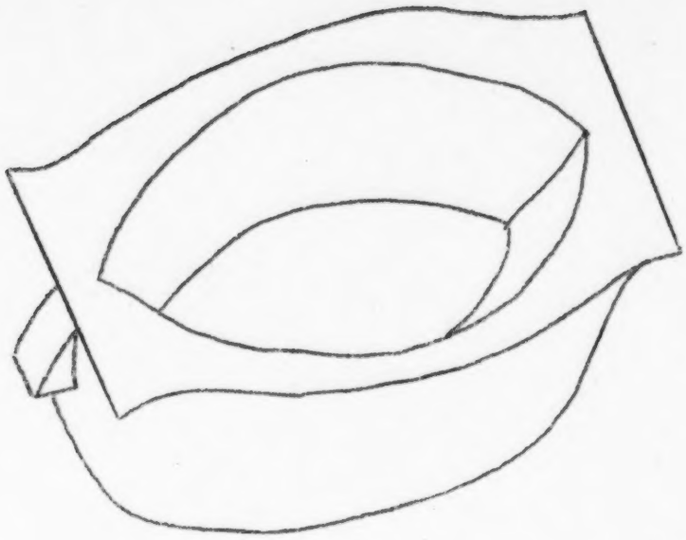
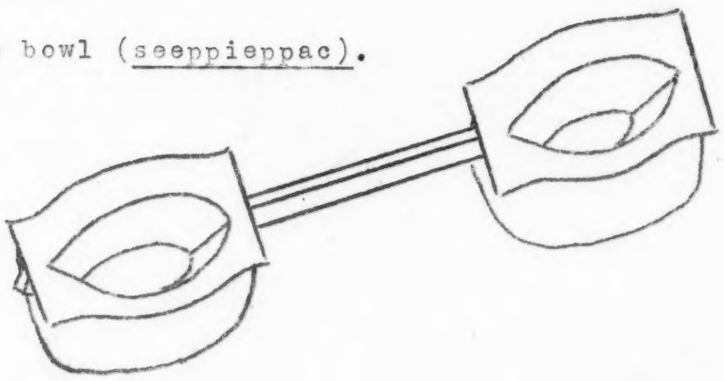


Figure 5.--Small bowl, fö̈yjene. Somewhat boat-shaped, with flat bottom, inside and out. Flared rim at either end. Length, 14 to 22 in. Width, 11 to 18 in. Depth, 5 to 7 in.

Figure 6.--Double bowl (seeppieppac).



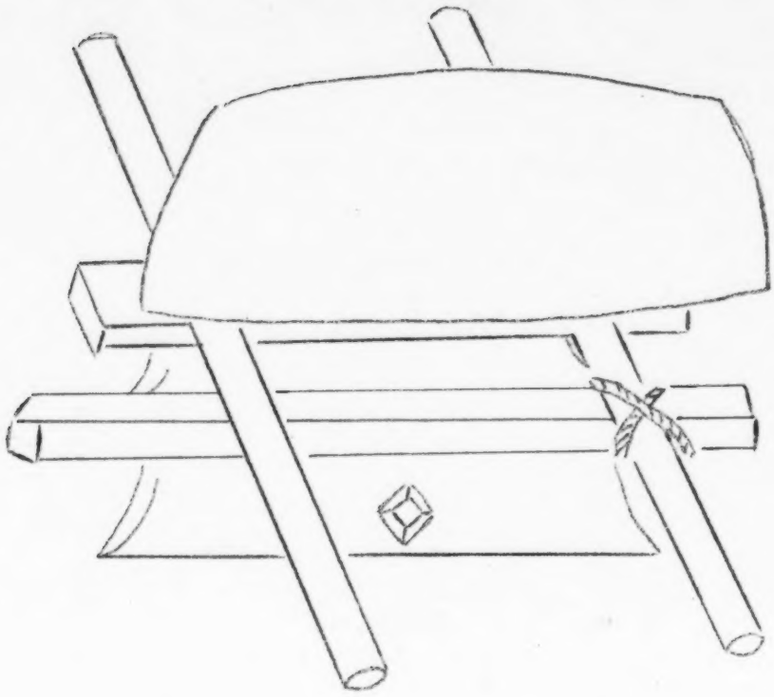


Figure 7.--Large ceremonial bowl (uunong) resting on supporting rack (wocang).

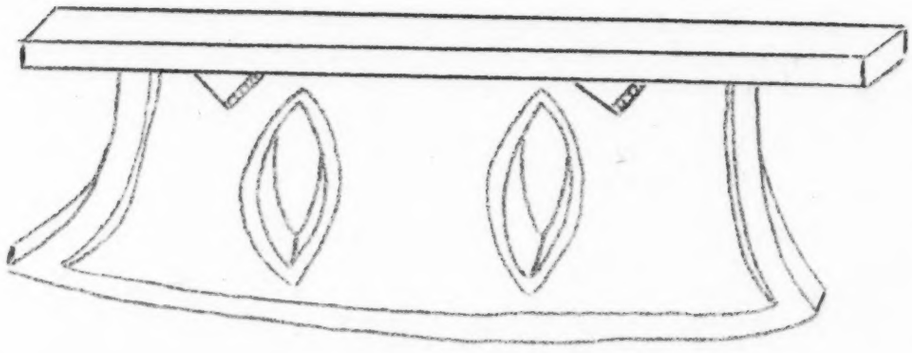
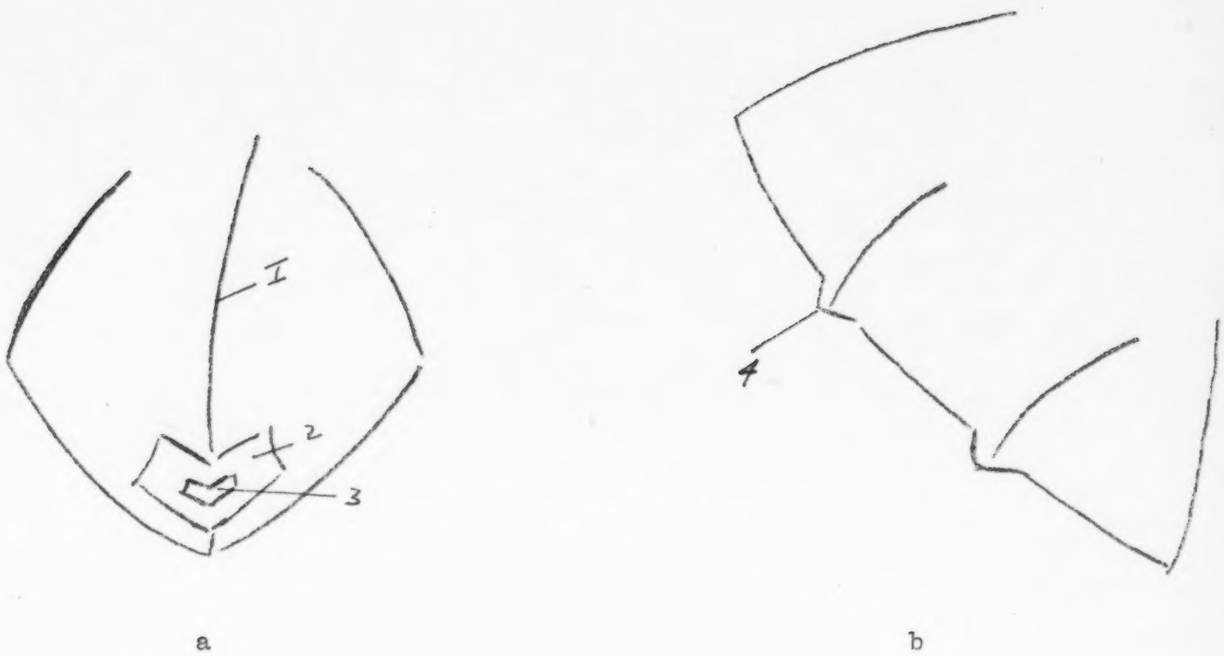
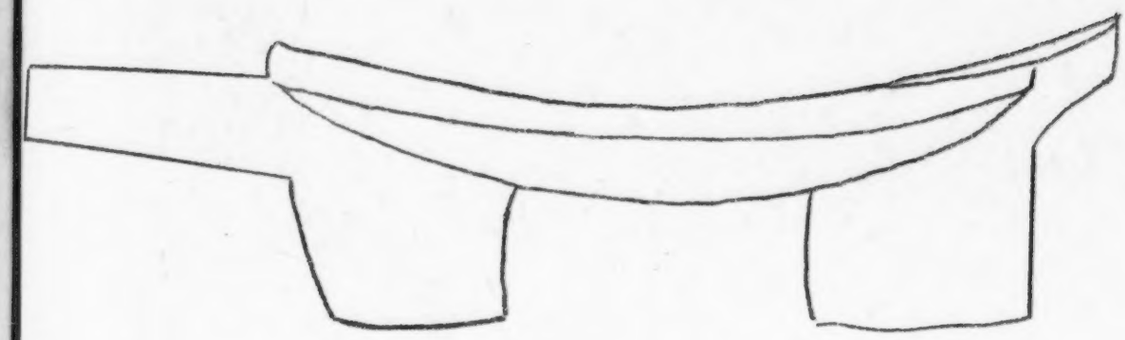


Figure 7.--End section of a supporting rack (wocang), showing variation in carved decoration.



a b

Figure 7.--Large ceremonial bowl (uunong). a, End view showing keel (I) and slightly raised areas (2) and (3) painted black and red respectively. The body of the bowl is painted red and the rim, black. b, Side view, showing small projections along rim (4).



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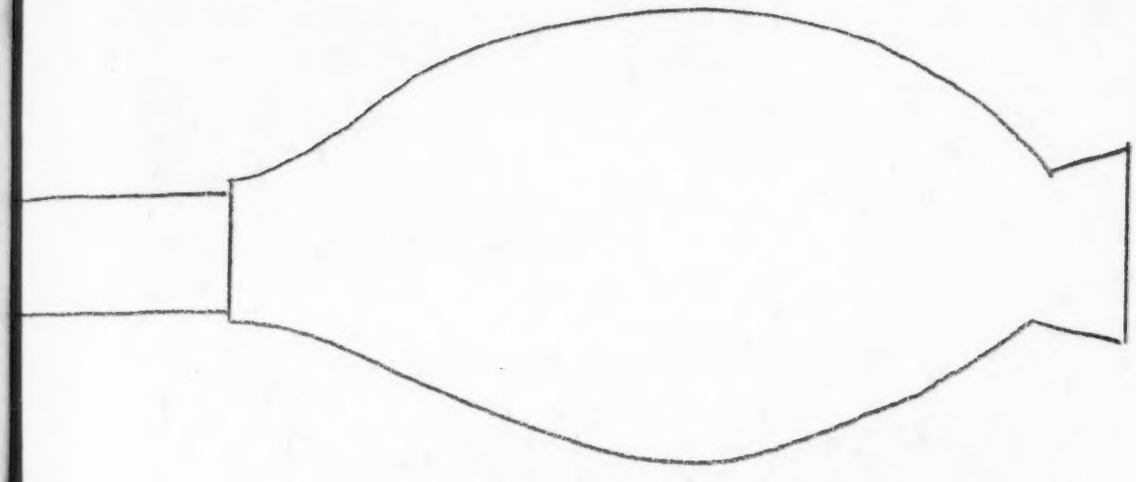
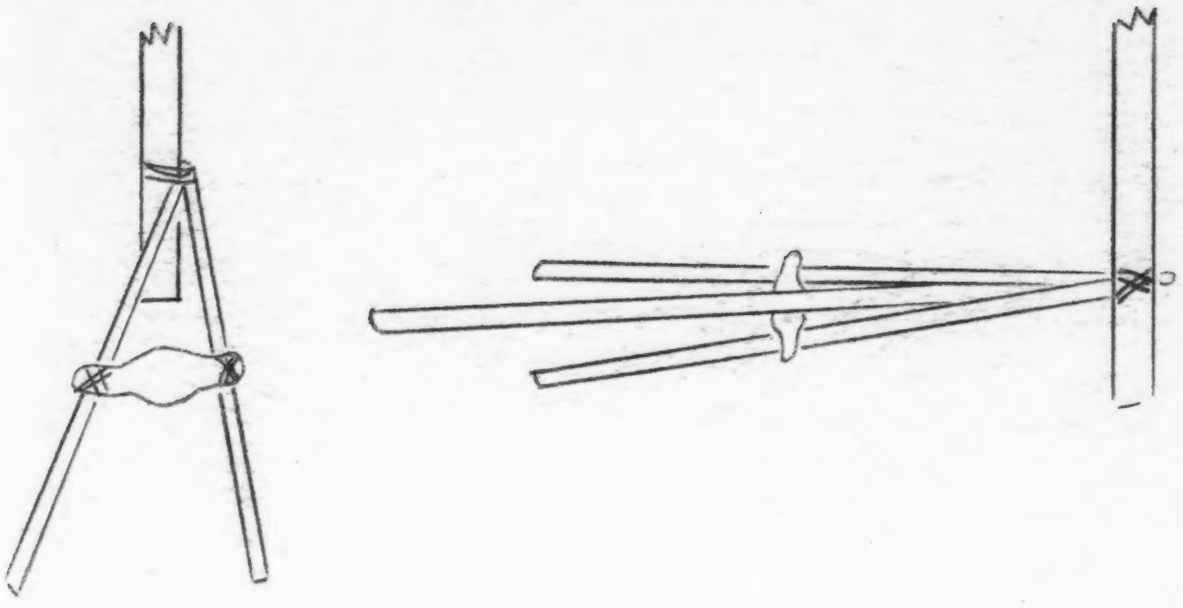


b

Figure 8.--Coconut grating stool (wassan pweiker). a, Side view. b, Top view. Overall length, 29 1/2 in. Overall height, 8 in. Seat length, 21 in. Seat width, 13 in.



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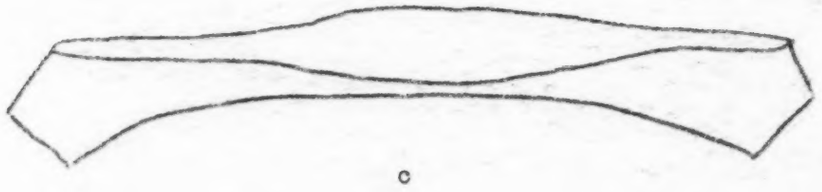


c

Figure 9.--Cross beam press (wycyyc). a,Front view. b,Side view. c,Profile view of cross piece (nöyn).

Figure 10.--Pounding block (nyyf). The block is equipped with flared projections on two sides, termed seningan nyyf. Wooden pegs are driven into the gound at the points of junction of these projections with the body of the block, thus preventing undue movement of the block during pounding operations. By way of variation, notches are cut in the ends of the two projections, and single pegs, cut to ifit the notches, are driven into the ground.

A slight depression is cut into the top surface of the block, slightly off center, so that the area of the top surface nearest the worker is greater than on the opposite side. The pounding is done on this depression, termed niip. The thickness of the block on the opposite side (epinikyn nyyf) is slightly less than on the side facing the worker, fän mösenin nyyf. Informants could give no reason for this difference.

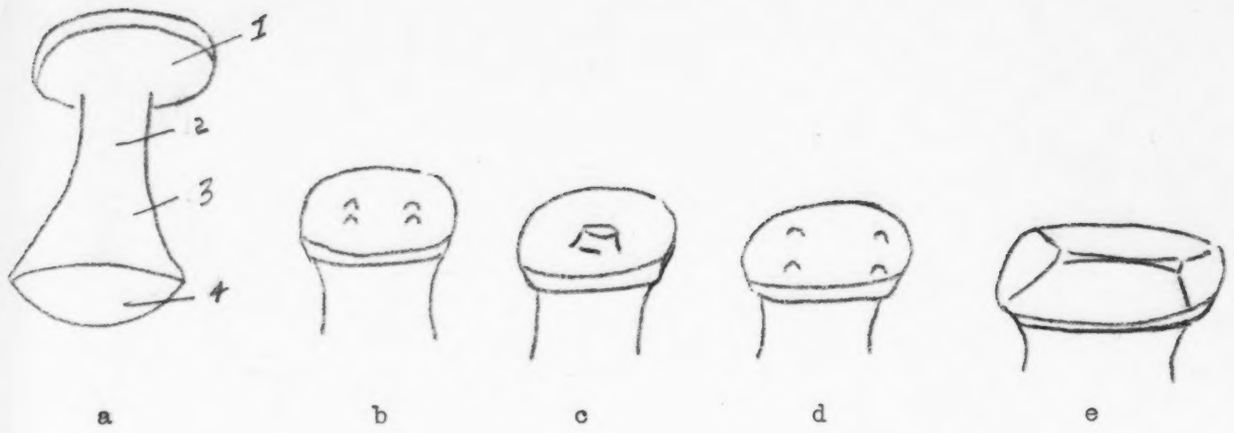


Figure 11.--Food pounder (wysyys). a, Form of typical pounder; (I) head, mökyran. (2) neck, neefösan. (3) body, unöopun. (4) base, fan. Average diameter of head, 3 in. Length of neck, 2 in. Diameter of neck, 1 1/2 in. b, c, d, and e, Showing different types of heads, characterized by small raised knobs, pwöötyn.

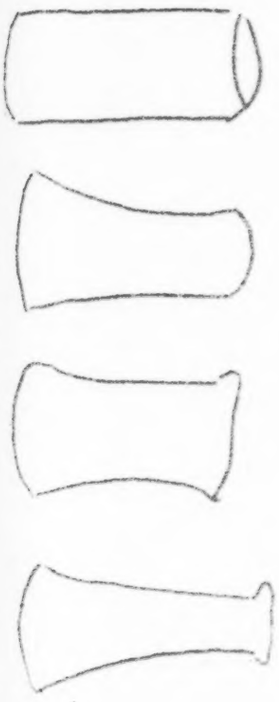


Figure 12.--Stages in making food pounder. a, Original piece of coral, etippo. b, Base rounded and some of neck and body removed. c, Head defined. d, Final shaping of neck, body and head.

Figure 13.--Breadfruit scraper (ngingi)

Figure 14.--Breadfruit picker (ias).

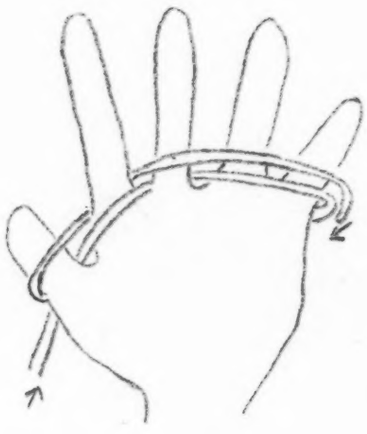


Figure 15.--Showing method of winding sennit on hand preparatory to lashing operations.

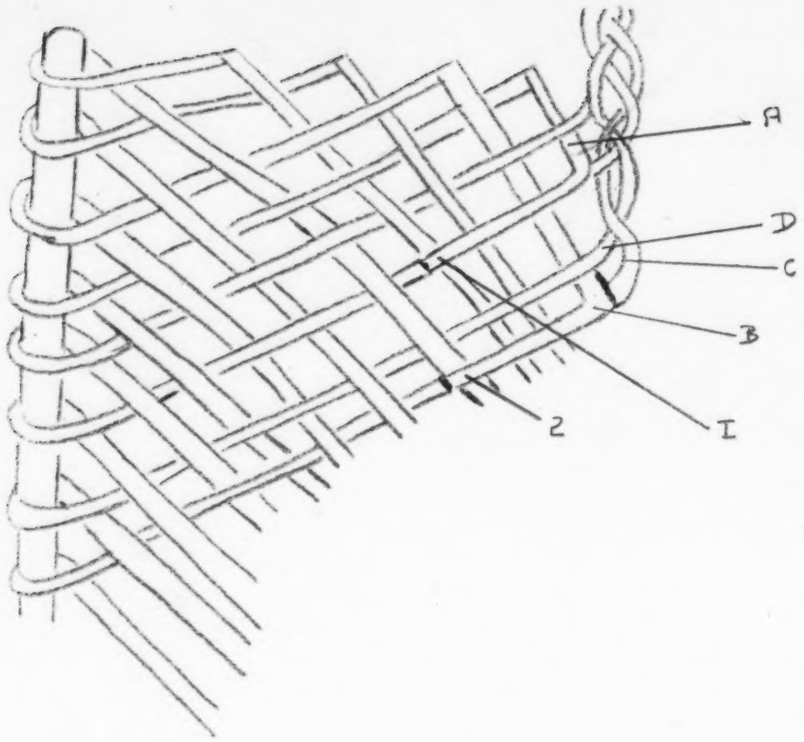


Figure 16.--Plaiting wall mat (kini).

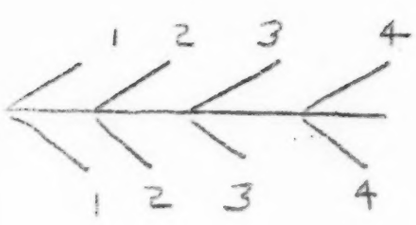


Figure 17.--Beginning palm leaf basket (föyföyirökuum).

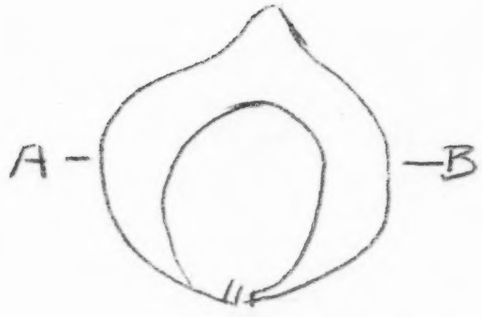


Figure 18.--Plaiting palm leaf basket (cykyseippan). V-shaped opening resulting from folding plaited triangle.

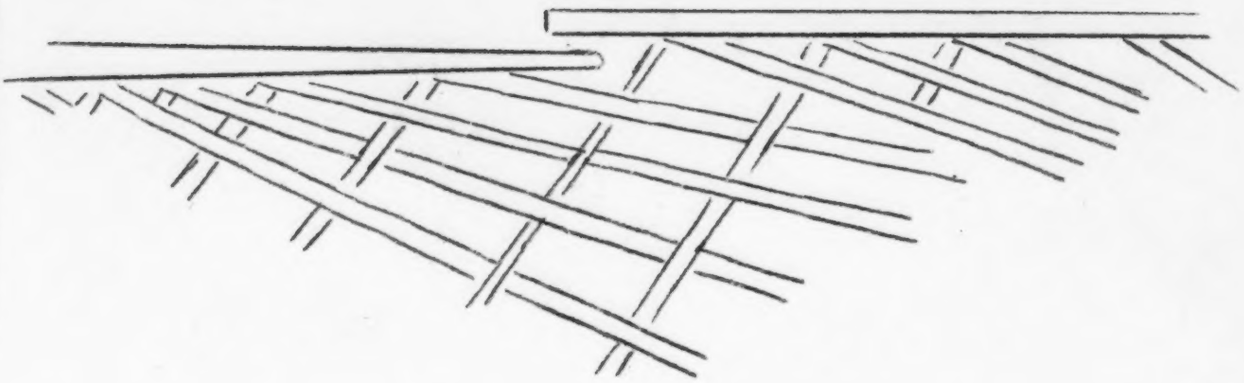


Figure 19.--Palm leaf basket (kumar). Joining two plaited triangles to form body of basket.

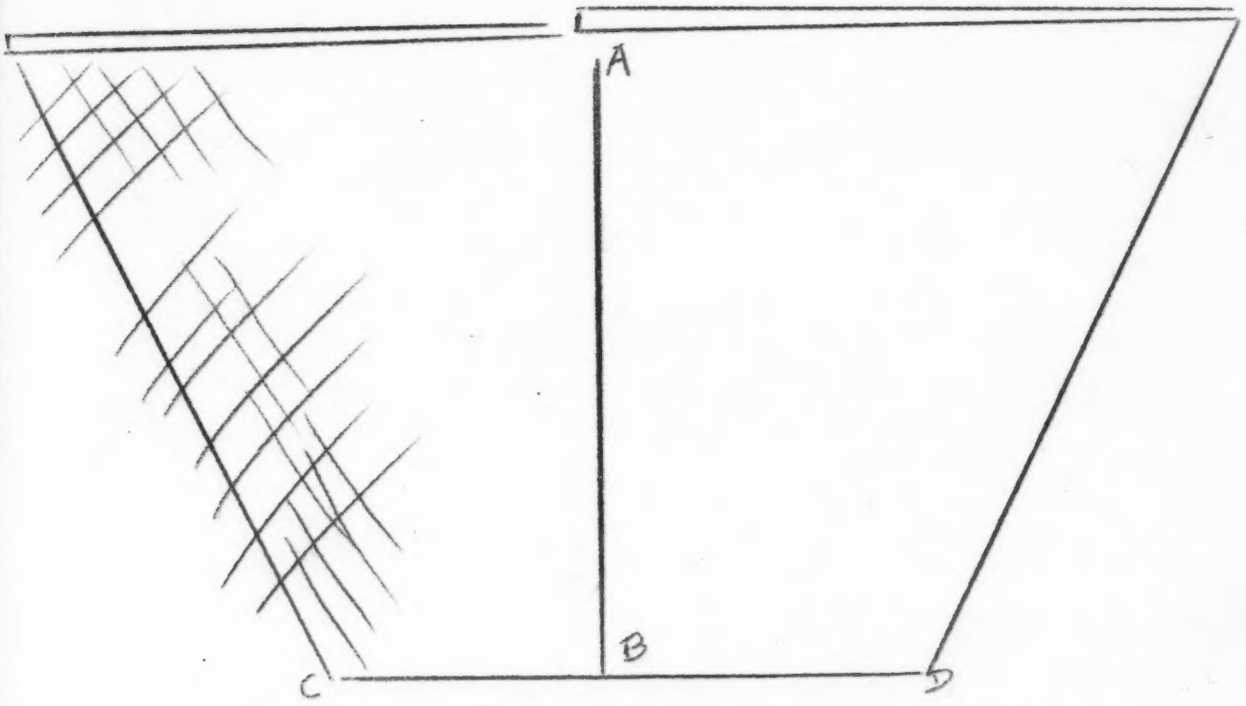


Figure 20.--Palm leaf basket (kumar). Outline shape of plaited area after joining two triangles.

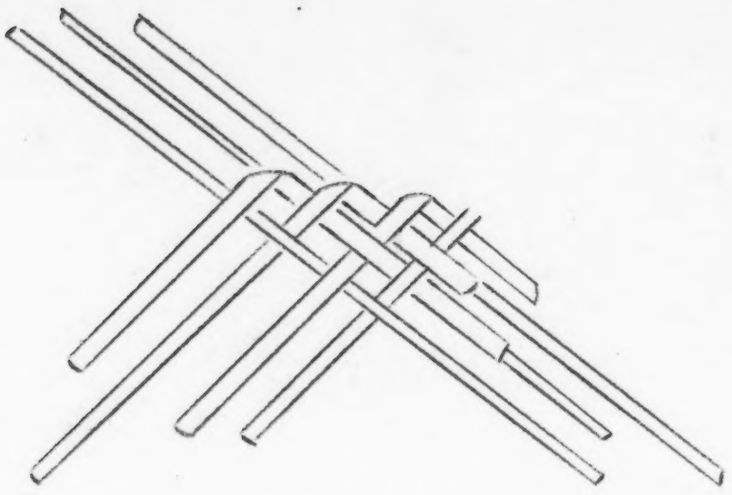


Figure 21.--Palm leaf basket (kumar). Method of making a temporary holding, iitta.

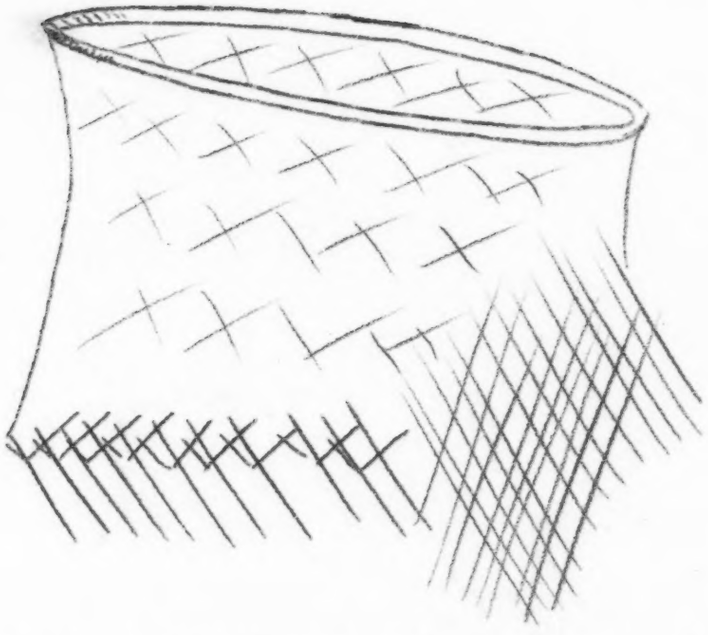


Figure 22.--Palm leaf basket (kumar). Plaiting the body of the basket.

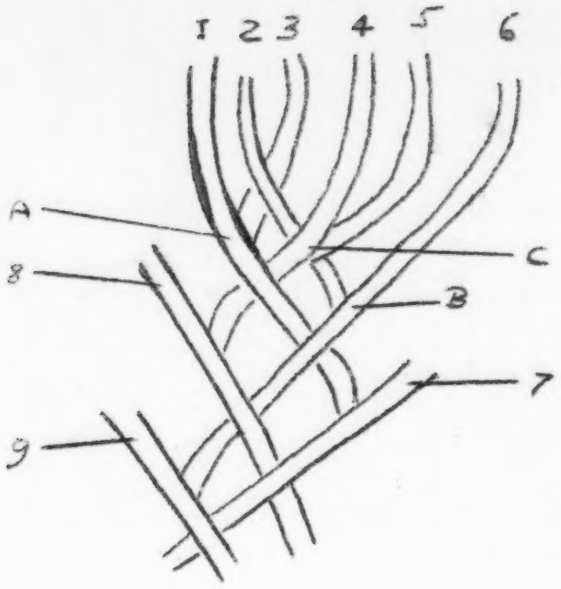


Figure 23.--Palm leaf basket (kumar). Beginning of first three-ply braid across bottom of basket. All three plies are commenced double. Thus (I) and (3), (2) and (6), (4) and (5), make three plies, termed (A), (B), and (C) respectively. (A) passes over (C) and under (B). (C) is bent a quarter turn and a new leaflet (8) is broughtin on top of it, after which (C) is passed over (B). (A) is bent a quarter turn and a new leaflet (7) is brought in on top of it, and (A) is then passed over (C). (B) is bent a quarter turn and leaflet (9) is brought in on top of it, etc.

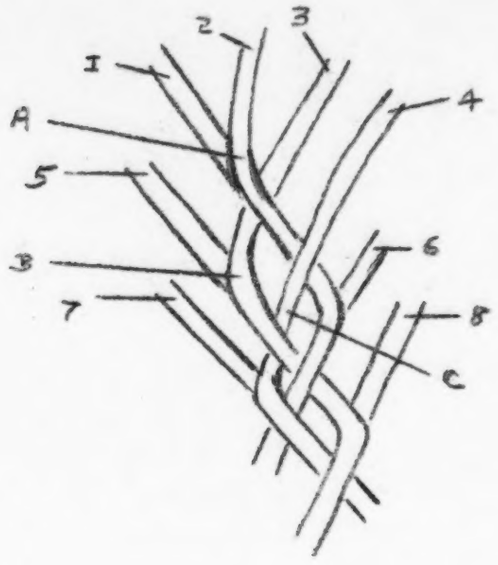


Figure 24.--Palm leaf basket (kumar). Beginning of second three-ply braid across bottom of basket. (I) and (2) make up ply (A), (3) forms ply (B), and (4) forms ply (C). (A) is brought over (B) and under (C). A new leaflet from the left (5) is then brought in on top of (C) and (B) is then bent a quarter turn to lie on top of the new leaflet, thus also overlying (C). A new leaflet from the right (6) is brought in on top of (B) and (A) is bent a quarter turn to lie on top of the new leaflet and thus overlies (B), etc.

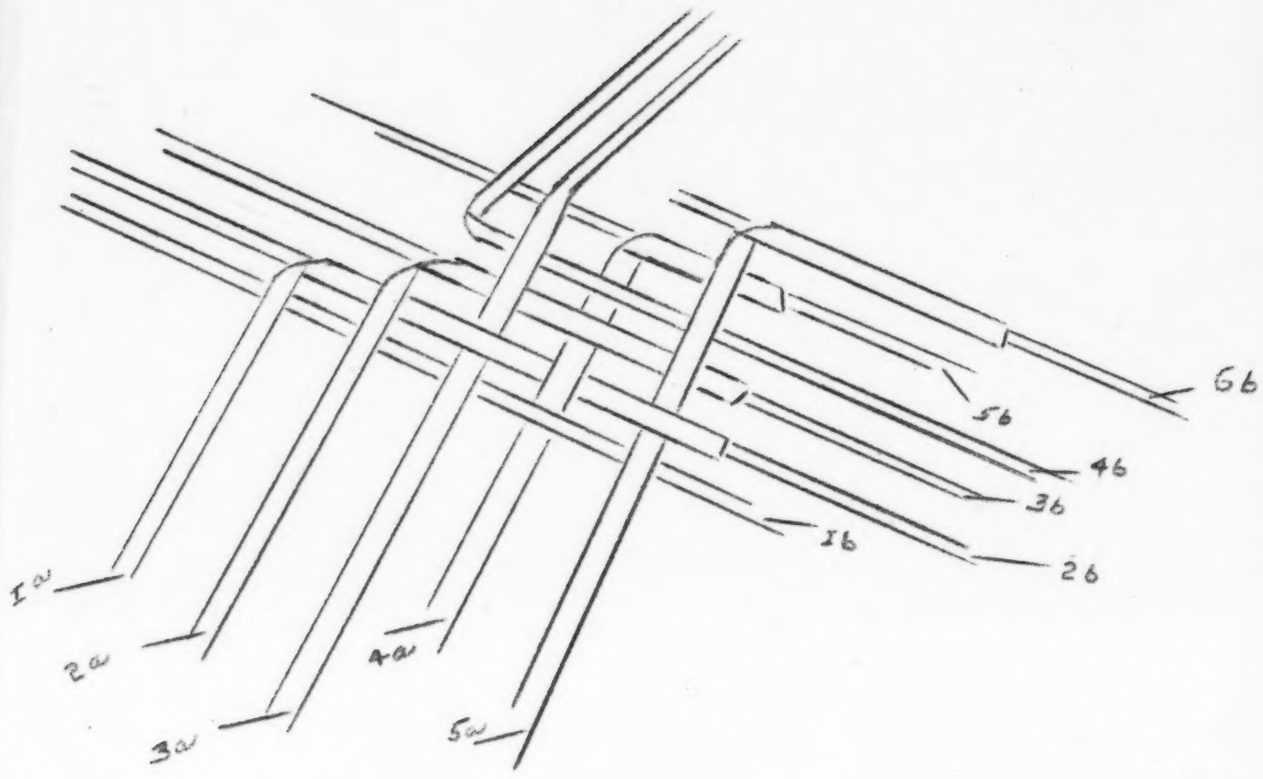


Figure 25.--Palm leaf basket (Äppeas). Showing method of making corner on bottom of basket.

Figure 26.--Palm leaf fan (saipö). Two frond sections joined by crossing left and right leaflets.

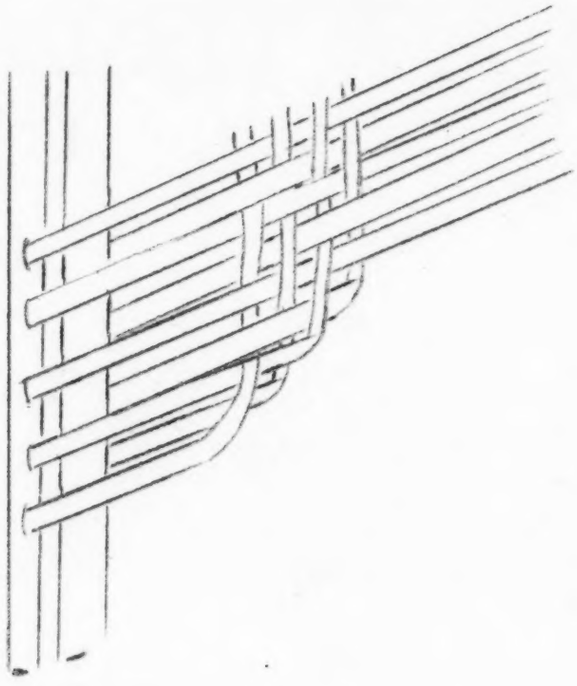


Figure 27.--Palm leaf fan (saipö). Commencing the plait on one side of the fan.

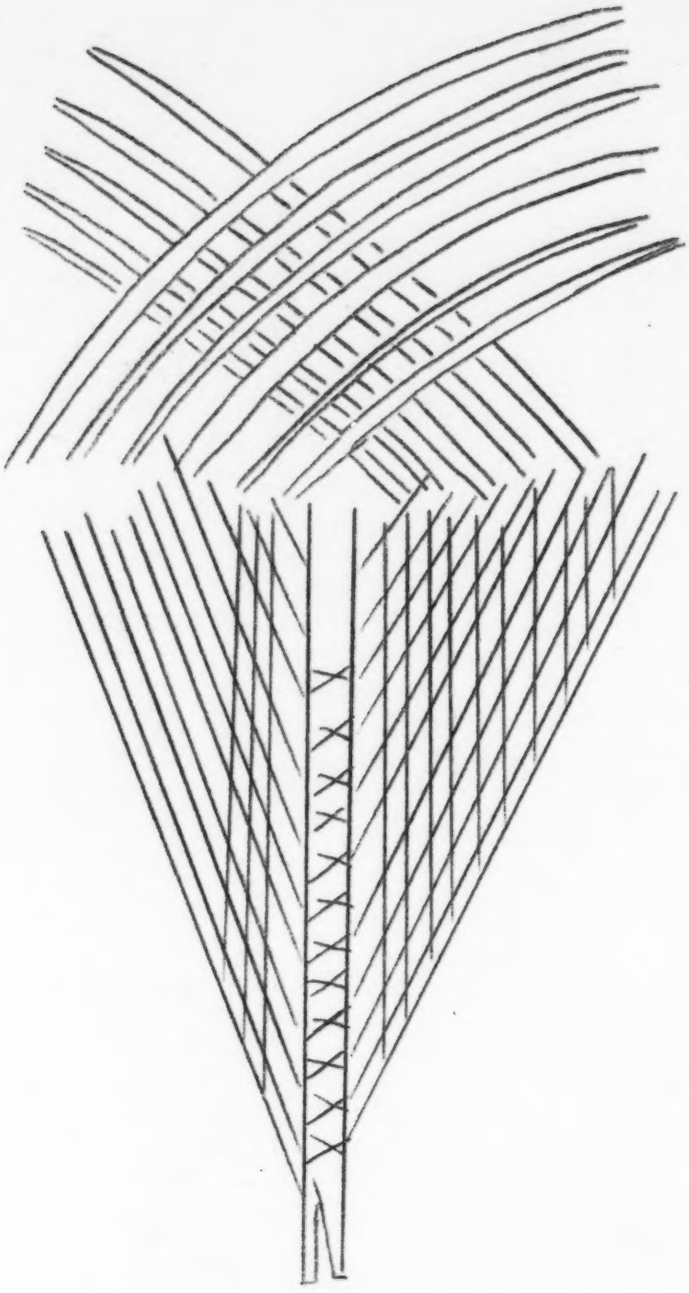
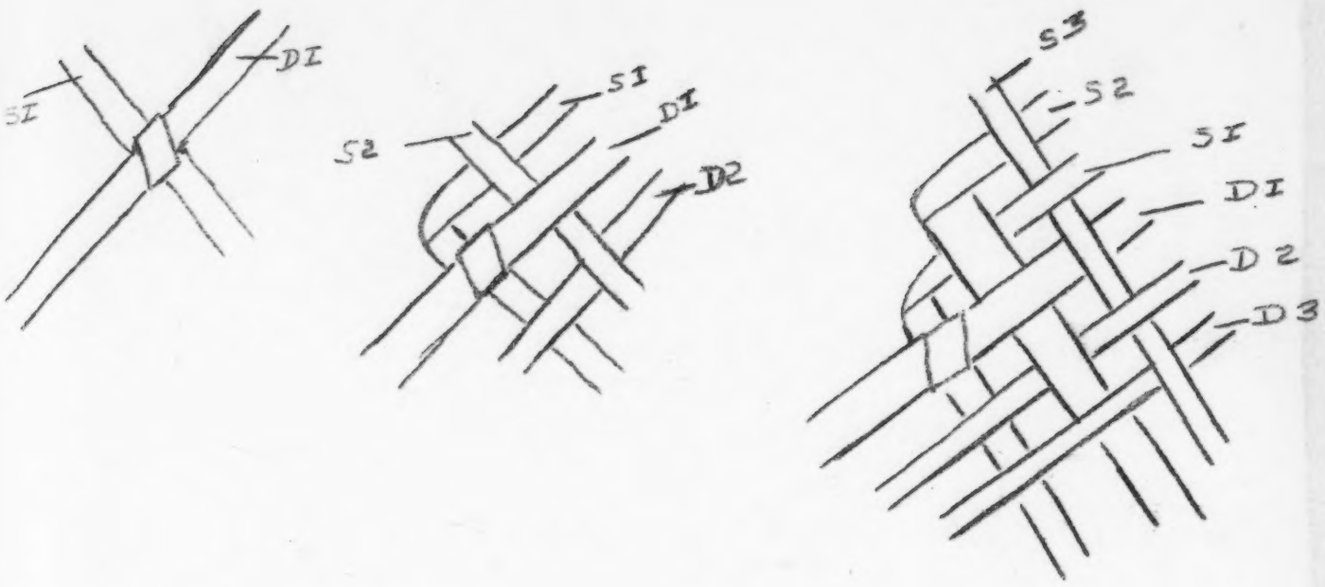


Figure 28.--Palm leaf fan (saipɛ̃). After plaiting both sides of fan, the loose leaflets at the top are plaited.



Figures 29,30,31.--Initial steps in plaiting pandanus leaf sleeping mat (kiekki).

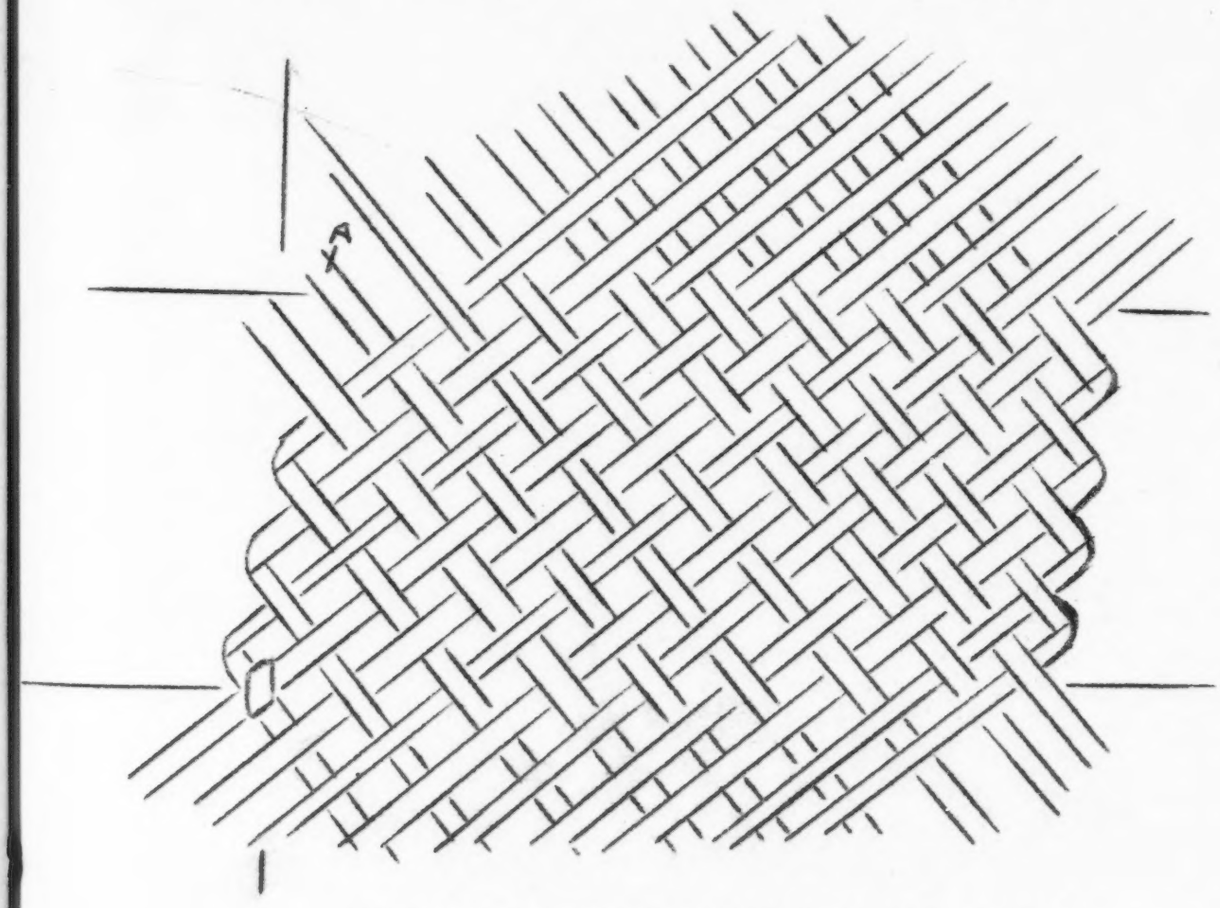


Figure 32.--Pandanus leaf sleeping mat (kiekki). Commencing strip finished.

Figure 33.--Pandanus leaf sleeping mat (kiekki). Beginning of finishing edge.

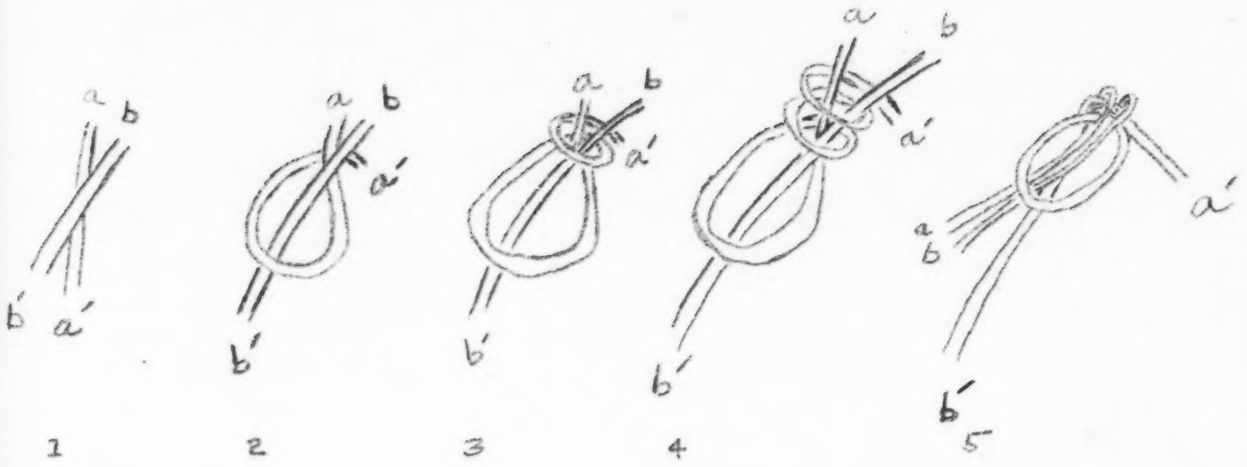


Figure 34.--Knot used for tying hibiscus fibers (puken sinifo). aa' is the new thread to be tied to the thread already completed, bb'. In (I) the threads are crossed and held between thumb and index finger of left hand. In (2) the right hand brings aa' up in a loose loop around the left thumb, bringing it around beneath both lines, between lines and index finger. In (3) and (4) aa' is given two tight loops around both lines, these loops being held in place by pressure of thumb against index finger. In (5) the two ends, a and b, are bent back through the loose loop, and the knot tightened by pulling on a'. Some weavers make the large loose loop as above, but use only one smaller loop, proceeding in other respects as above.

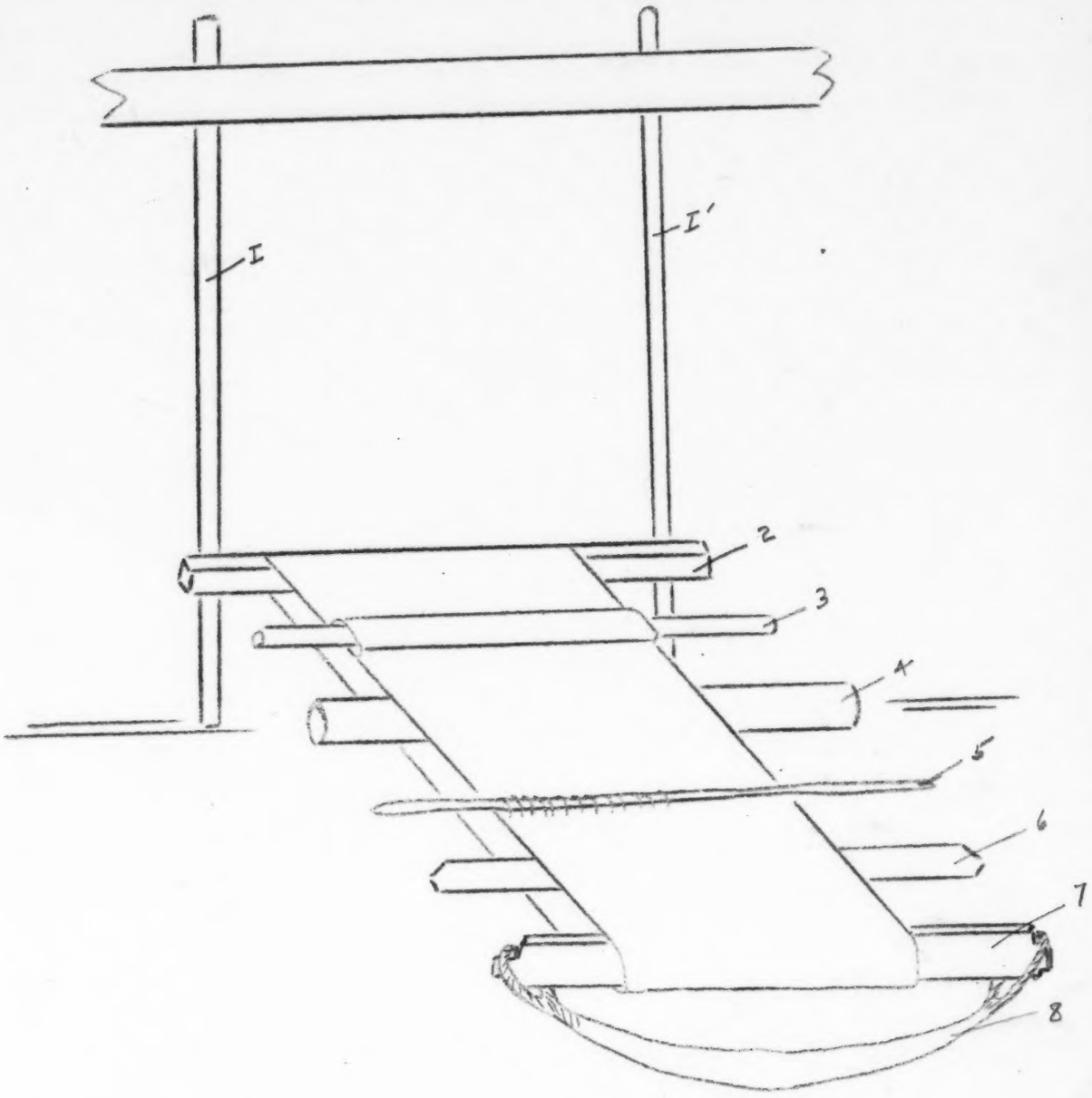


Figure 35.--Horizontal tension loom (tyr). The cloth and warp beams are about 45 in. in length, 2 1/2 in. wide, and 2 in. thick. Vertical supports (II'). Warp beam (2). Lease rod (3). Shed stick (4). Heddle (5). Sword (6). Cloth beam (7). Sling or belt (8).

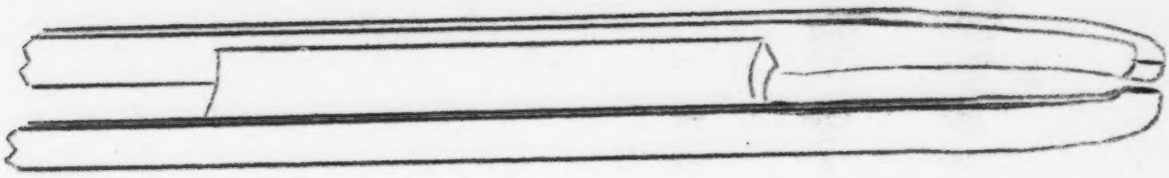


Figure 36.--Shuttle (ɑ̈sɑ̈p). Length, 17 in. Width, 1 in. Depth, 1/2 in. Length of core, 10 3/4 in.

Figure 37.--Weaving belt or sling (ʊ̈wʊ̈k). Type made on Truk. Overall length, 47 in. Width, 4 in. Thickness, 3/16 in. Diameter of loop, 2 in.

Figure 37.--Weaving belt or sling (ʊ̈wʊ̈k). Type made on Puluwat Island. Overall length, 51 in. Length of intermediate "neck", 7 in.

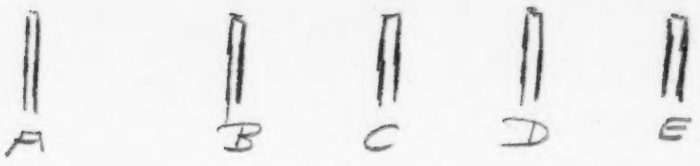


Figure 38.--Warp winding (enikes). Arrangement of stakes for plain weave. Lease rod (A). Warp beam (B). Shed stick (C). Heddle (D). Cloth beam (E).

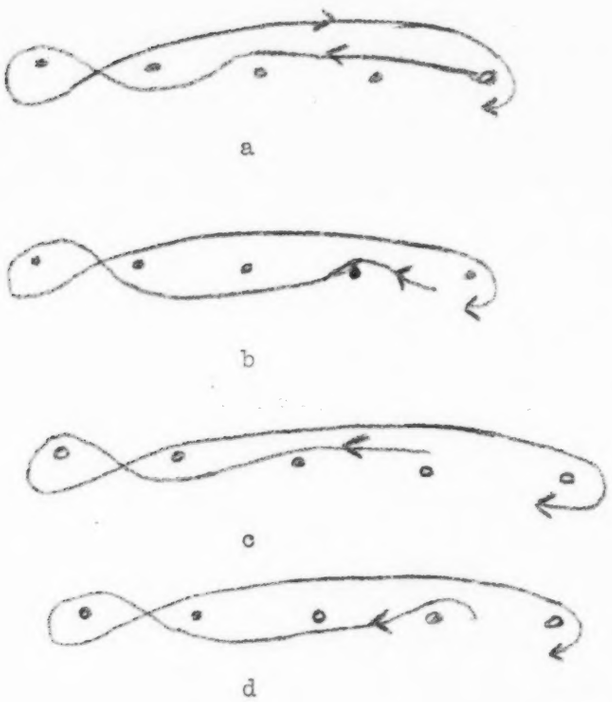
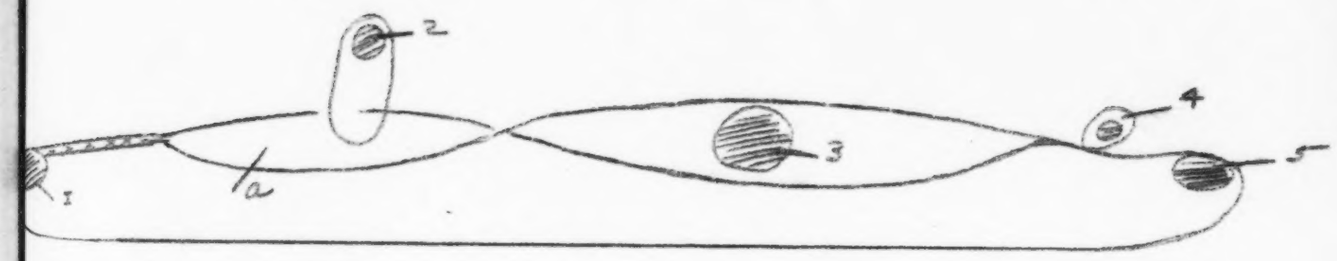
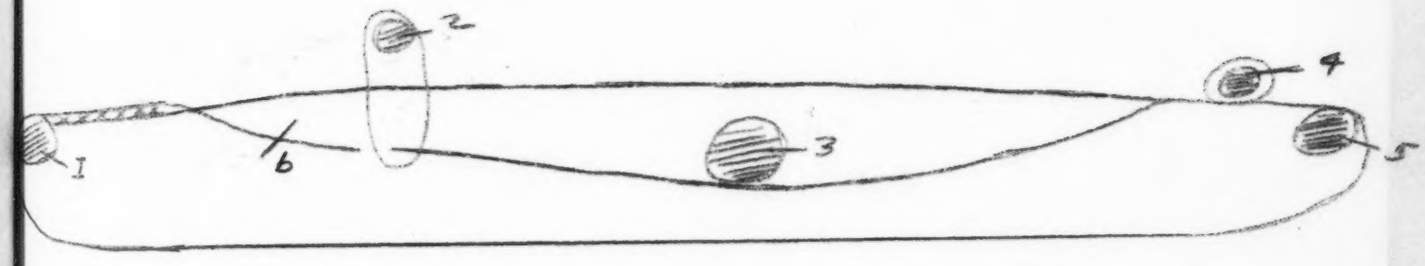


Figure 39.--Warp winding (enikes). First four winds, plain weave.

Figure 40.--Warp winding (enikes). Arrangement of stakes in winding warp from standpoint of two-heddle weave. Lease rod (I). Warp beam (2). Shed stick (3). Heddle (4). Cloth beam (5). Auxiliary rod, tiip (6). Auxiliary rod, tiip (7). Extra heddle (8).



a



b

Figure 41.--Weaving (tyryni). a, First shed. Cloth beam (I). Heddle (2). Shed stick (3). Lease rod (4). Warp beam (5). b, Counter-shed.

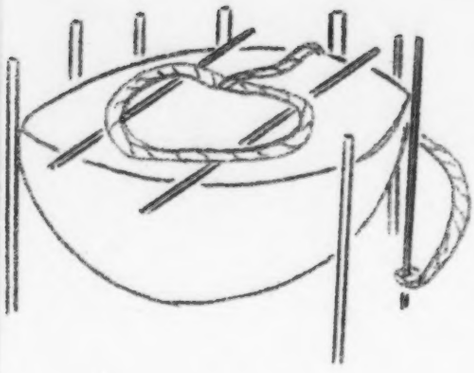


Figure 42.--Trap for birds (eseiic).

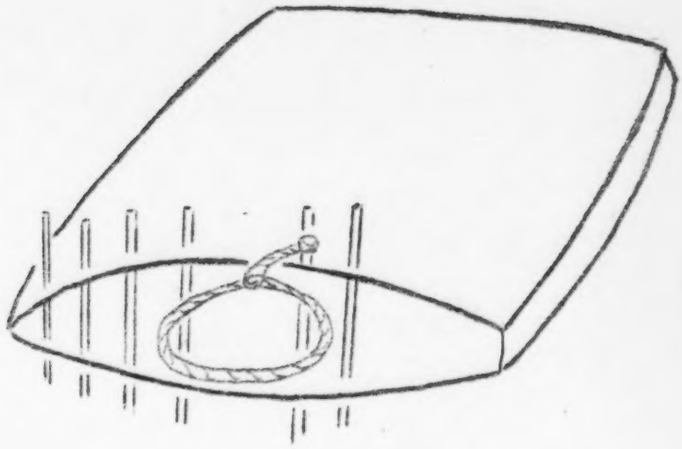


Figure 43.--Trap for birds (eseiic).

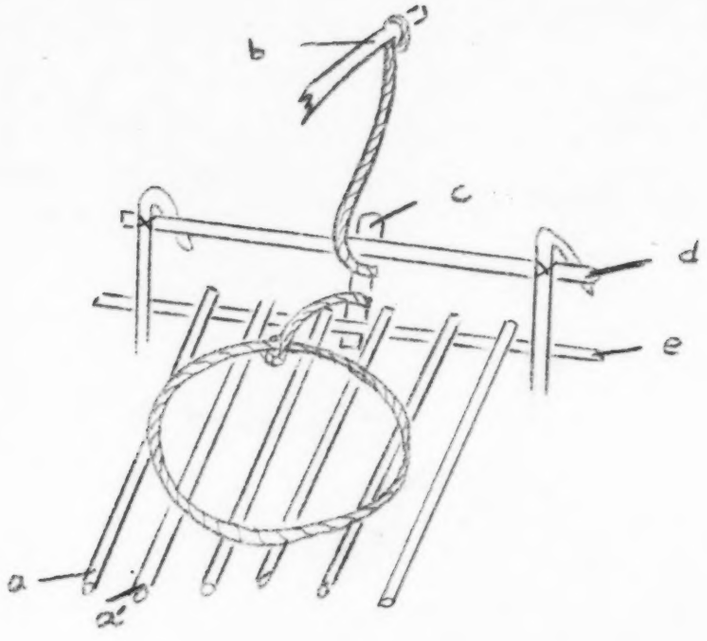


Figure 44.--Trap for wild fowl (nikappic). The trap as figured is set up in front of a circular enclosure covered with leaves. Bait is placed in the enclosure. The parallel bars (a,a') lead to an opening in the enclosure. A pole or sapling is fixed in the ground in front of the trap and bent over it (b). A line runs from this pole to a tie stick (c) which is fitted between two bars (d) and (e). The latter is not lashed in place, but is kept in position by the pull against (c) exerted by the sapling. When a bird steps on the parallels, this forces (e) down, thus releasing (c). The sapling snaps upright and the bird is caught in the noose.

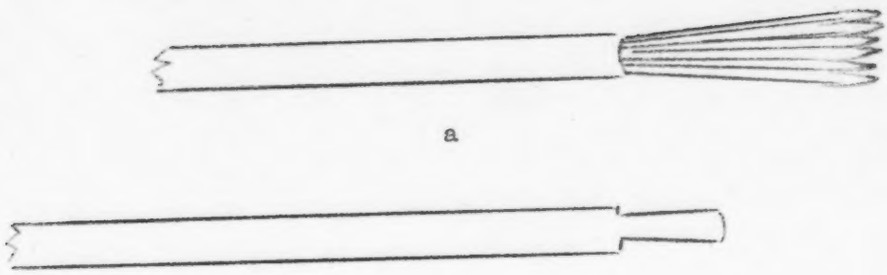


Figure 45.--Multi-pronged fish spear (ɔppong). a, Circumferential prongs fitted to end of shaft. b, Shaft, showing reduced section at one end (neemwanan) on which prongs are fitted.

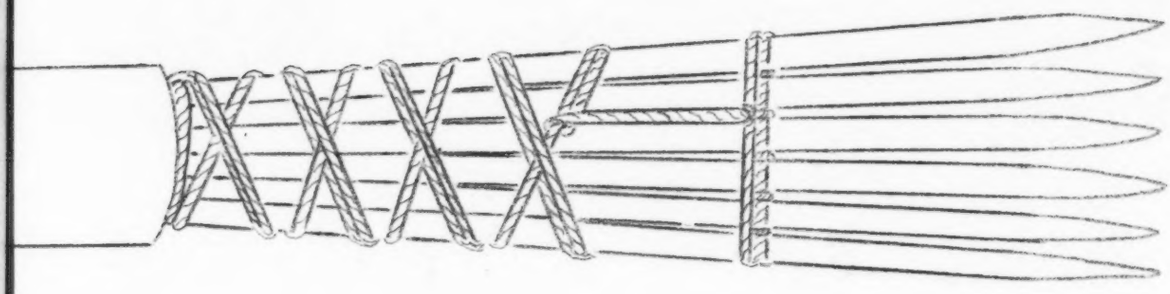


Figure 46.--Multi-pronged fish spear (ɔppong). Method of lashing prongs to shaft.

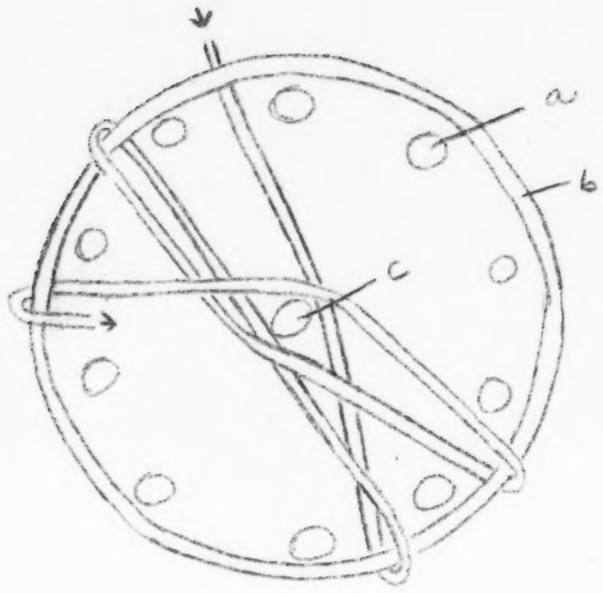


Figure 47.--Multi-pronged fish spear (Oppong). Cross-section showing arrangement of circumferential prongs and center prong, (a) and (c) respectively. The center prong is held in place by passing the line back and forth between circumferential prongs, passing around the outer line (b) in each case.

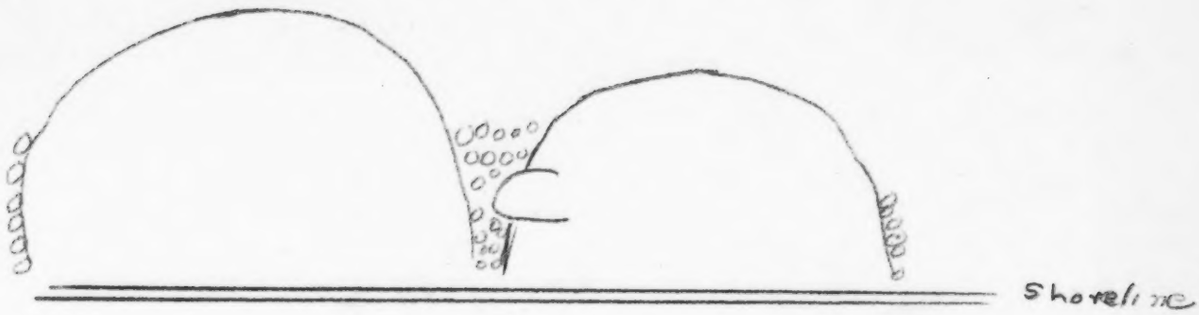
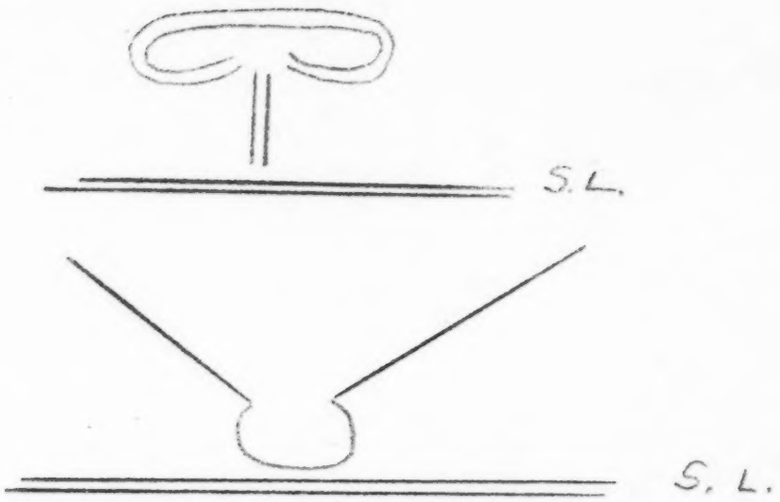


Figure 48.--Outline form of stone fish weir (maai).



Figures 49 and 50.--Alternative forms of stone fish weir (maai).

Figure 51.--Lobster pot fish trap (unupwɑ̈). Commencing trap by twining two wefts about series of warps.

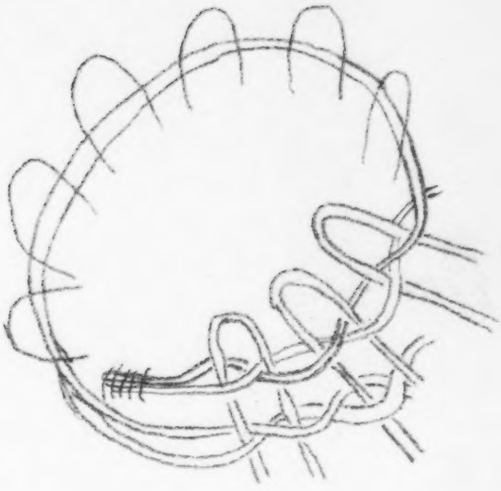


Figure 52.--Lobster pot fish trap (unupwɑ̈). Commencing the entrance by spiralling technique.

Figure 53.--Lobster pot fish trap (unupwɑ̈). Showing entrance and beginning of curve in body of trap.

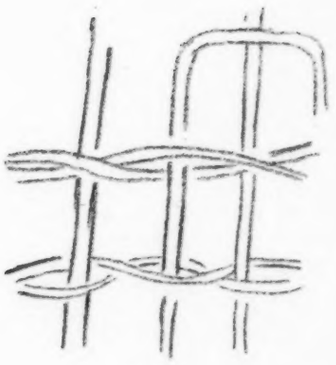


Figure 54.--Lobster pot fish trap (unupwɑ̈). Adding new warp element.

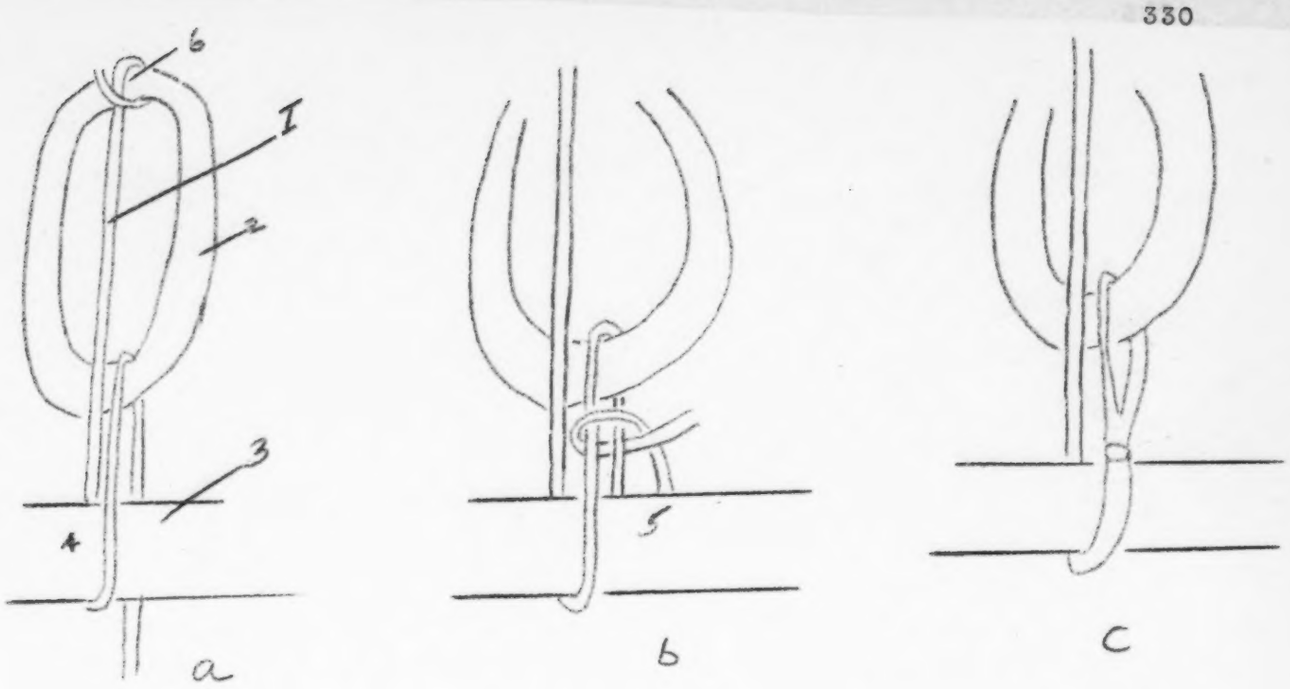


Figure 55.--Netting technique. Netting line (I). Support (2). Guage (3).

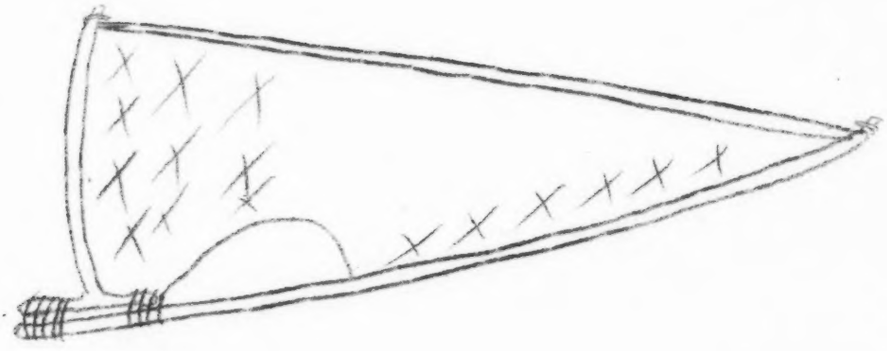
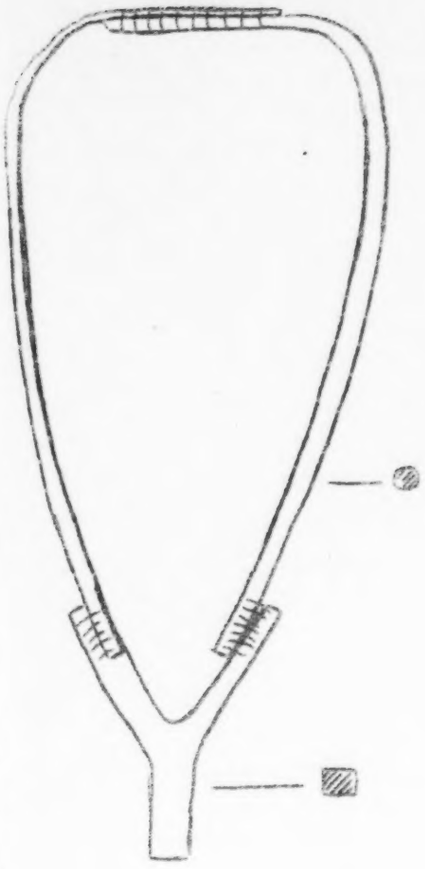


Figure 56.--Woman's hand net (cuun attau).



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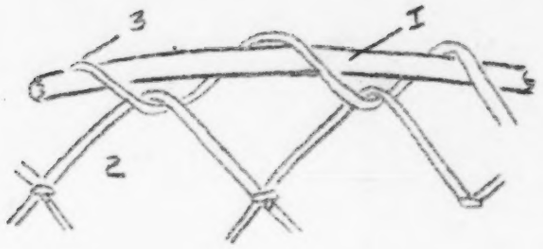

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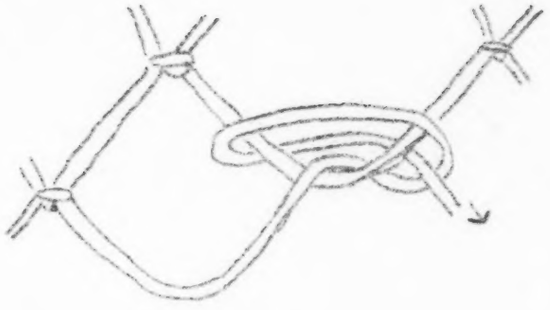
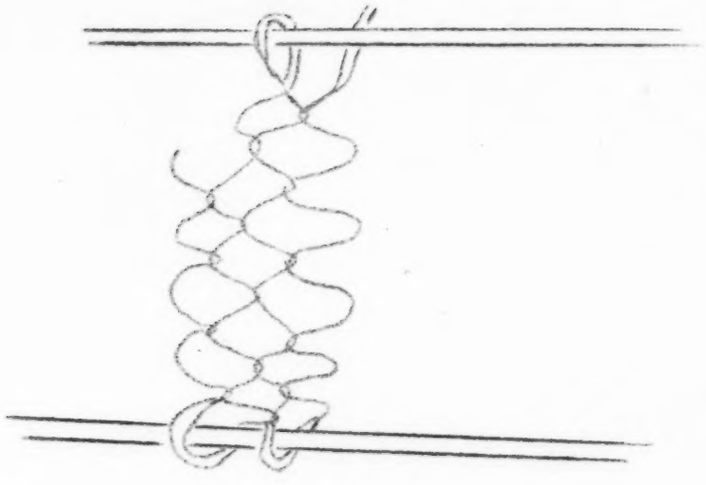


c

Figure 57.--Circular net (cuun umunö). a, Frame, length 57 in. Width, 36 in. b, Attachment of net to frame. (1) net frame (2) marginal mesh (3) two single cords wound spirally around frame and through marginal meshes. c Nettingknot. Depth of net, 52 in.

The above sketches and information were supplied by Dr. Peter H. Buck and were taken from a specimen presented to Bishop Museum (Number C. 10160).

a



b

Figure 58.--Turtle net (uuk). aMaking first row of meshes using two hanks of netting material. bShowing attachment of net to ropes along either longitudinal edge.

Figure 59.--Method of grasping the stick (n̈yn) in operating fire plough (ṡpurök).

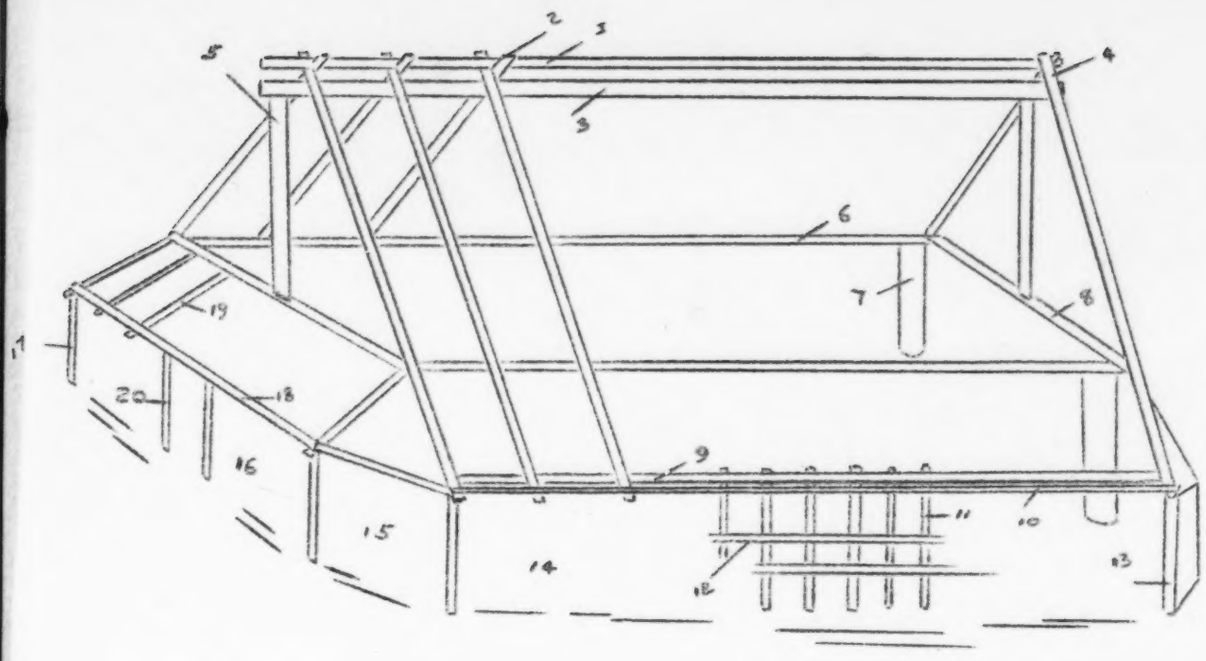
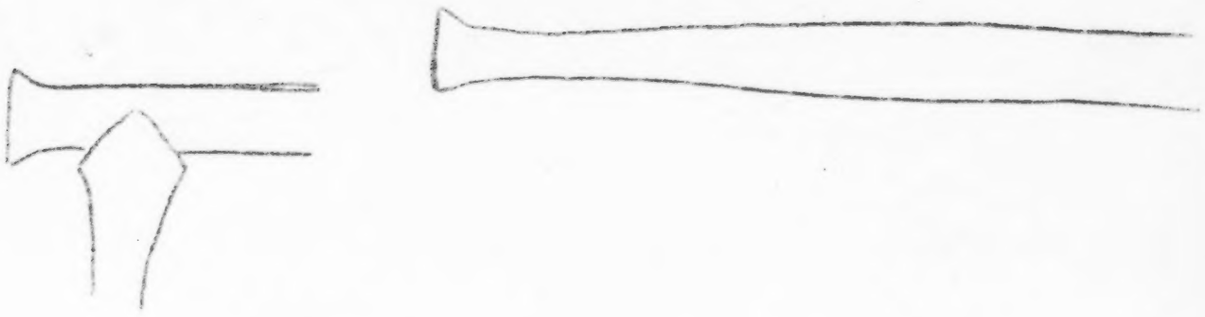
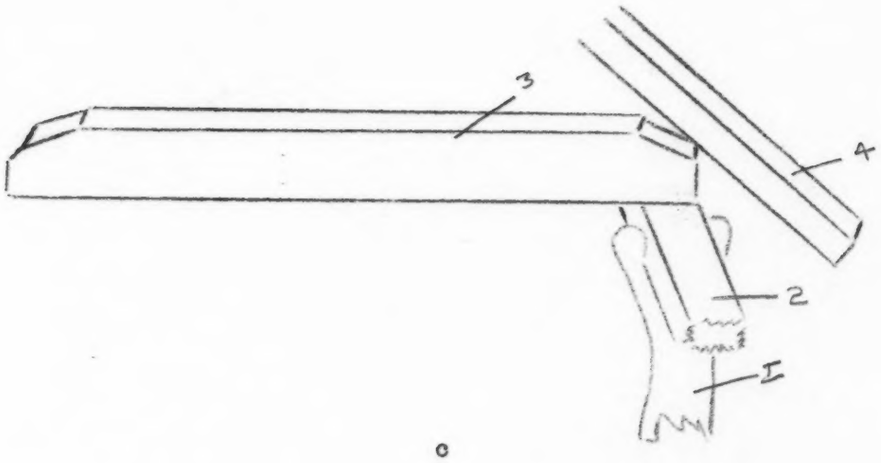


Figure 60.--Basic structural features of both dwelling houses and men's houses. (1) secondary ridgepole (kuning). (2) rafter (wöö). (3) ridgepole (wung). (4) end rafter (wöömas). (5) king post (pwöö̈t). (6) wall plate (tito). (7) corner post (wyr). (8) end plate (ö̈ycam). (9) side extension wall plate (epyykyn fä̈ttattar). (10) eave purlin (epyyk). (11) side post (etiip). (12) horizontal stringer (ä̈ä̈pengis). (13) side extension corner post (14) side extension (fä̈n epyyk or fä̈ttattar). (15) corner extension (16) end extension (siis). (17) end extension corner post (wyresiis). (18) end extension wall plate (epyykyn siis). (19) end extension rafter (20) door post (petesam).

a



b



c

Figure 61.--a, Corner post heads, side and front view. b, Wall plate, showing end fitted into notch in corner post head. c, Relative positions of corner post (1), wall plate (2), end plate (3), and rafter (4).

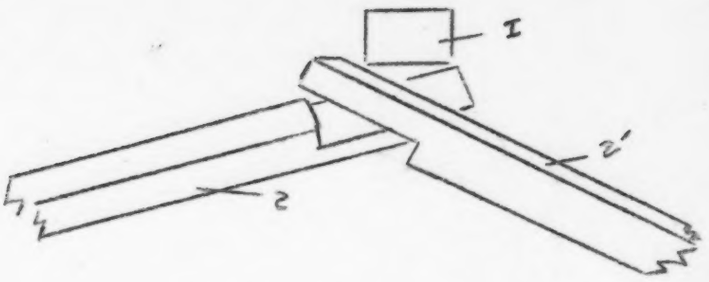


Figure 63.--Interlocking of end rafters (22') forming support for secondary ridgepole (1).

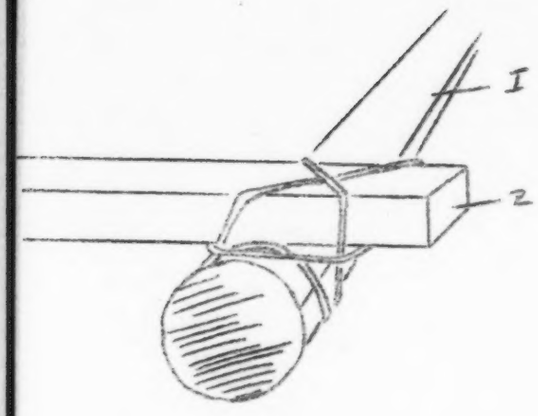


Figure 62.--Cross-bound lashing of end plate (2) to wall plate)1).

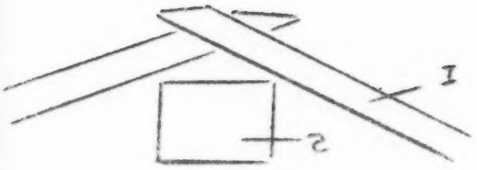


Figure 64.--Crossed rafters above ridgepole (2).

Figure 65.--Lashing rafter (1) to ridgepole (2).

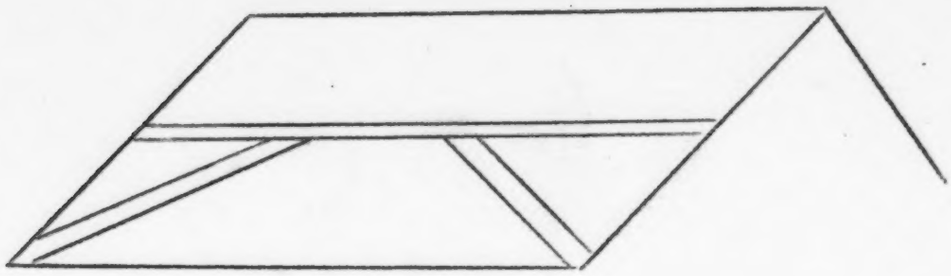


Figure 66.--Arrangement of stringers (ääpengis) on underside of roof.

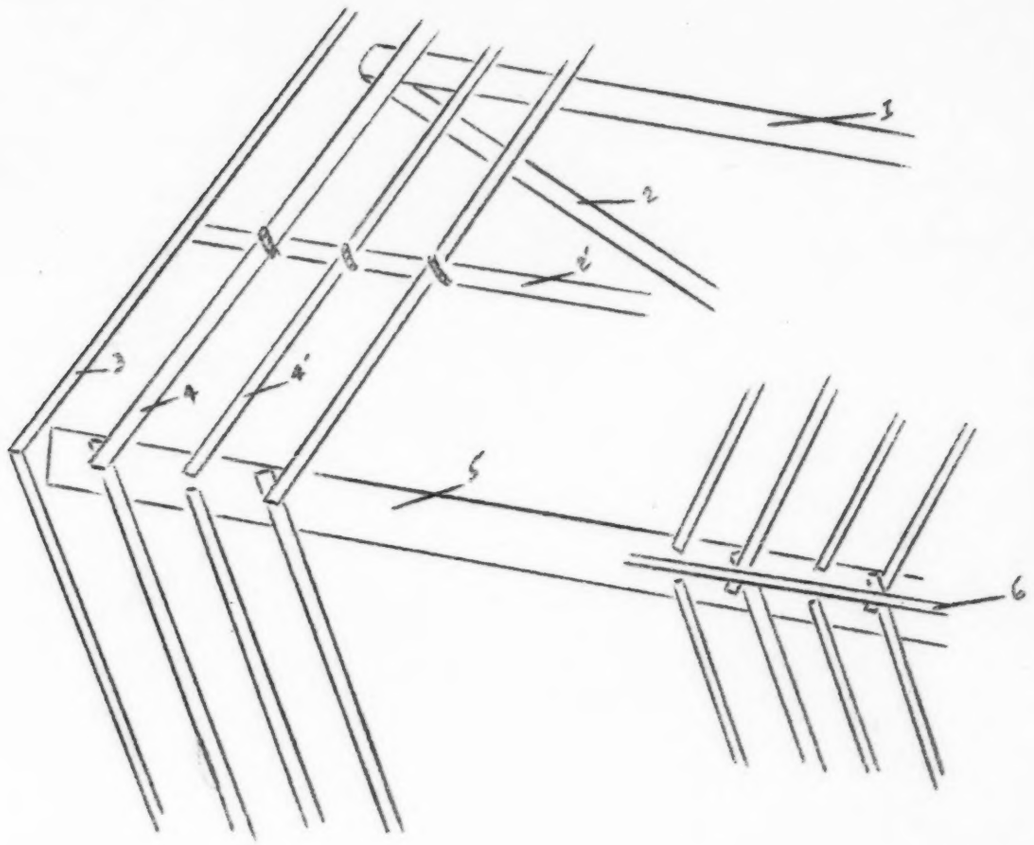
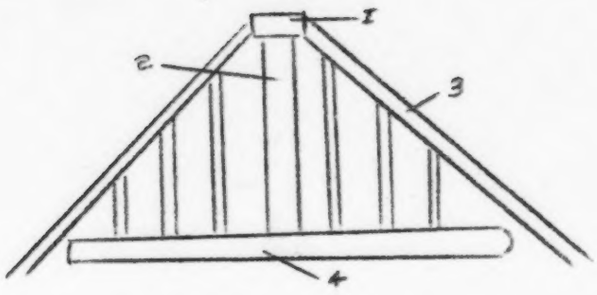


Figure 67.--Looking down on roof, showing arrangement of primary and secondary ridgepoles, rafters, and stringers lashed with diagonal lashing to underside of rafters. (1) wall plate (2) diagonal stringer (3) end rafter (4) principle rafter (5) ridgepole (6) secondary ridgepole.



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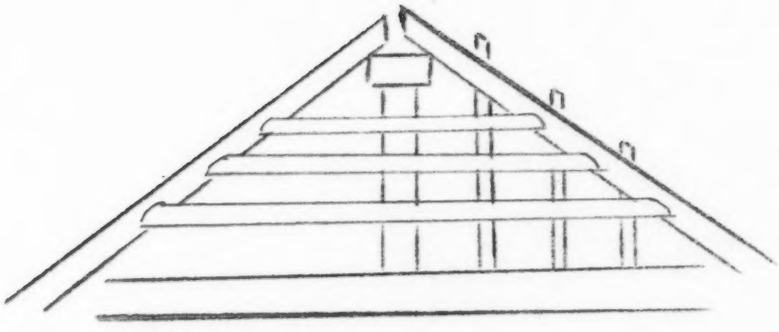


b

Figure 68.--Alternate methods of closing gable ends by a system of hibiscus poles to which are lashed thatch sheets. (1) ridgepole (2) king post (3) end rafter (4) end plate.

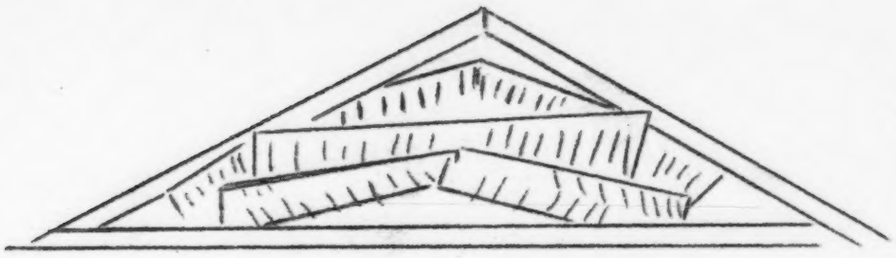


Figure 69.--Arrangement of thatch sheets on gable ends.

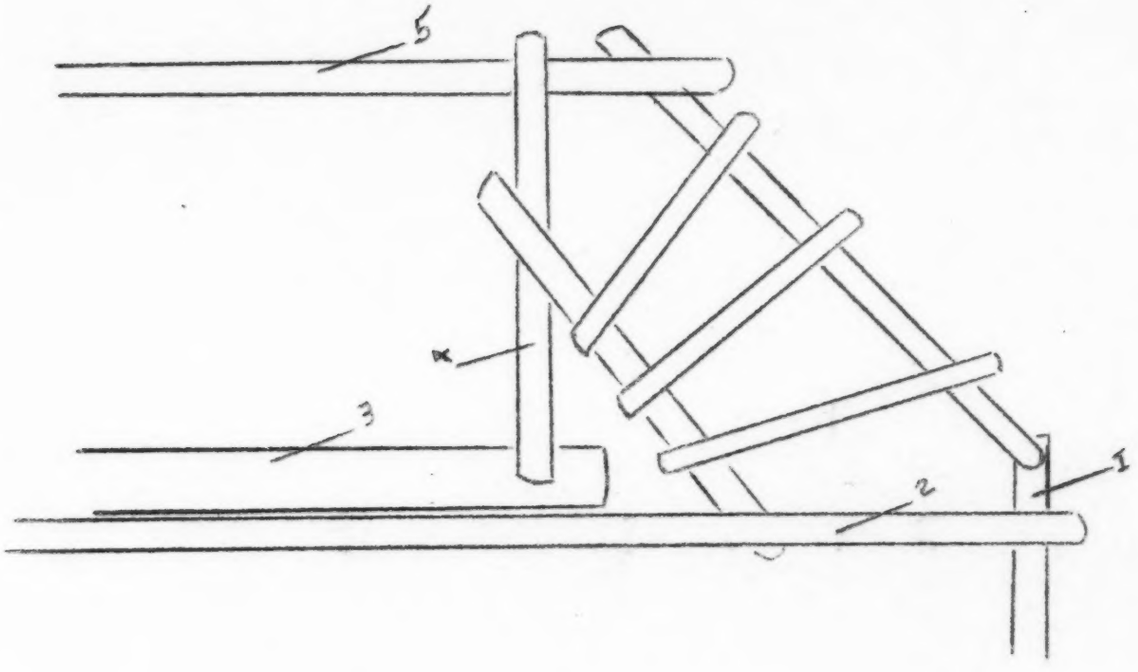


Figure 70.--Arrangement of corner extension rafters. (1) side extension wall plate (2)main structure end rafter (3) secondary end plate (4) end extension rafter (5) end extension wall plate.

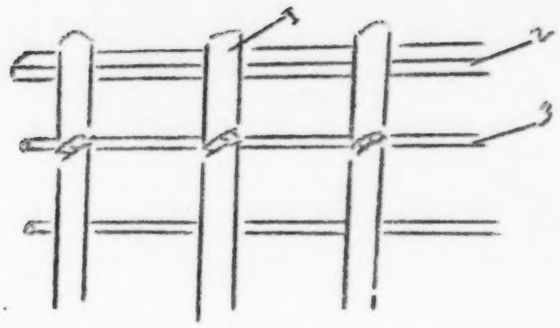


Figure 71.--Arrangement of side posts (etiip) and horozontal stringers (ᵻᵻpengis). (1) side post (2) end of side extension wall plate (3) horizontal stringer.

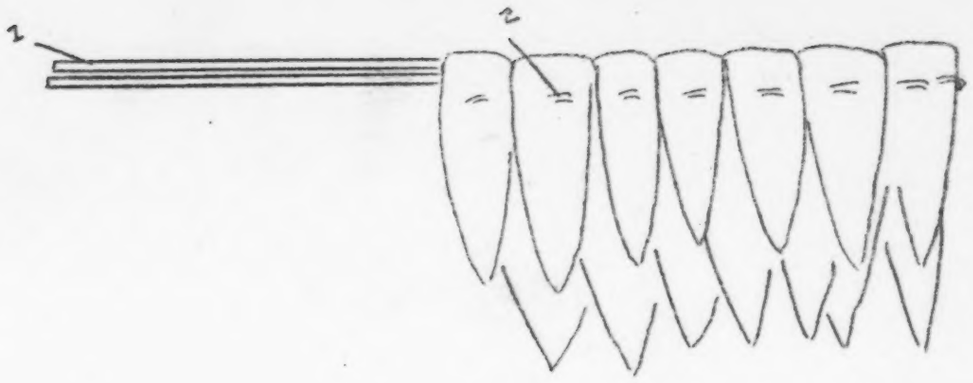


Figure 72.--Thatch sheet. (1) binding rods (2) tie line

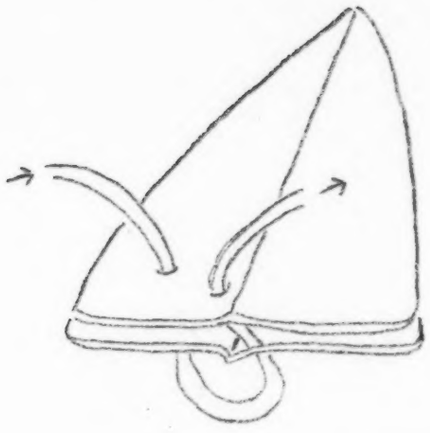


Figure 73.--Method of sewing leaflets in making thatch sheets. Cross-section looking at folded leaflet just below binding rods. Tie line passes around leaflet midrib on underside.

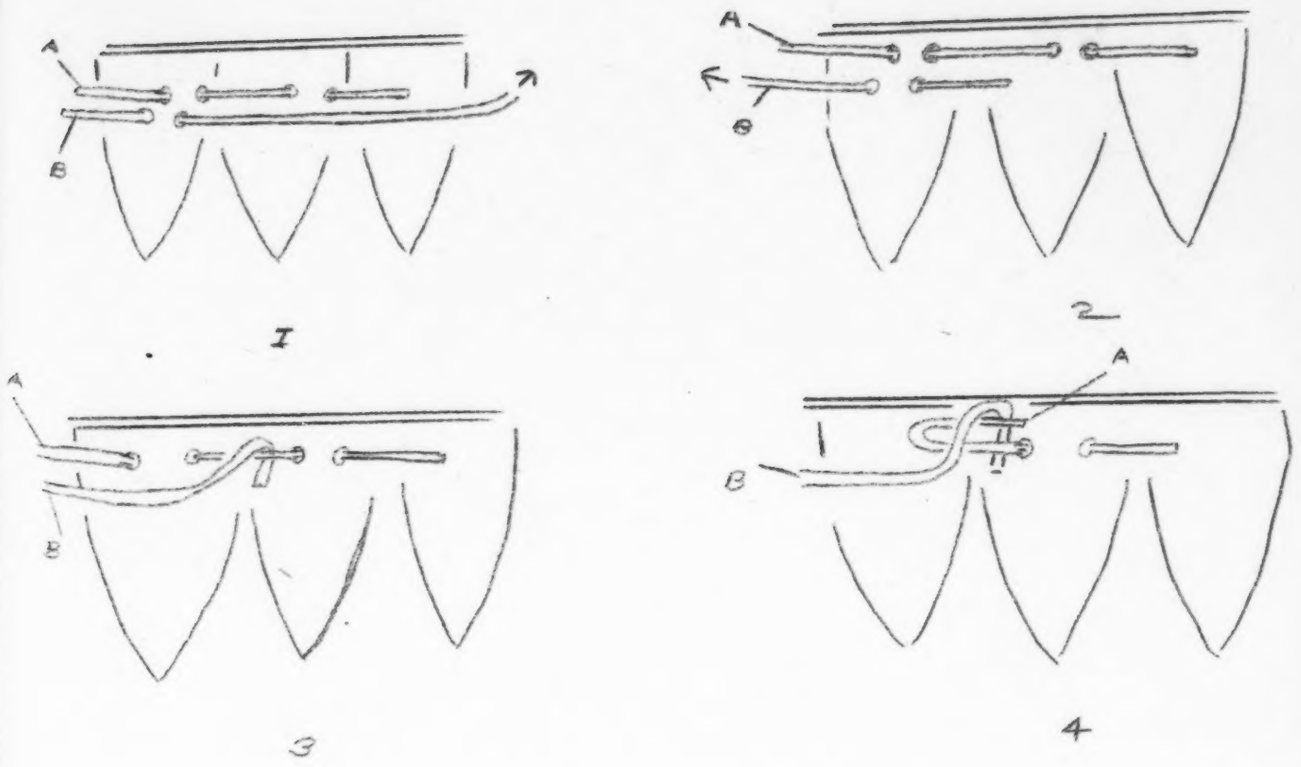


Figure 74.--Adding new element to tie line in making thatch sheets. (A) old line (B) new line.

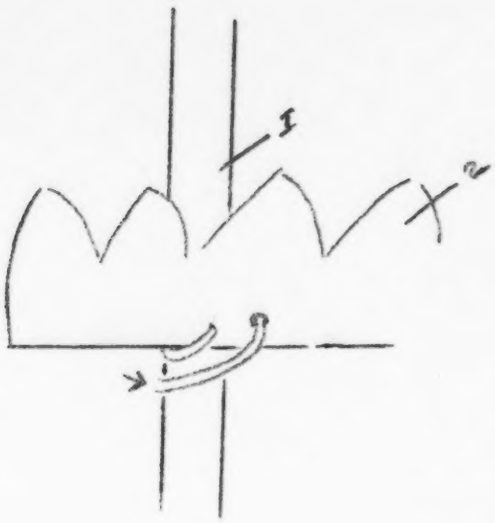


Figure 75.--Tying thatch sheet (2) to rafter (1). Looking down on #1 sheet.

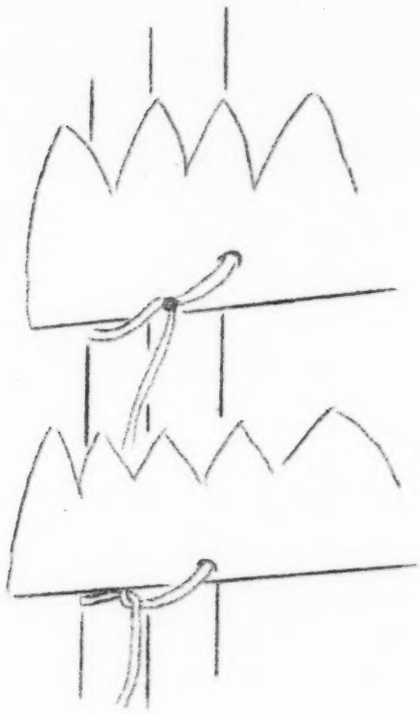


Figure 76.--Tying #2 sheet. Sheets are not overlapped in order to show the lashing.

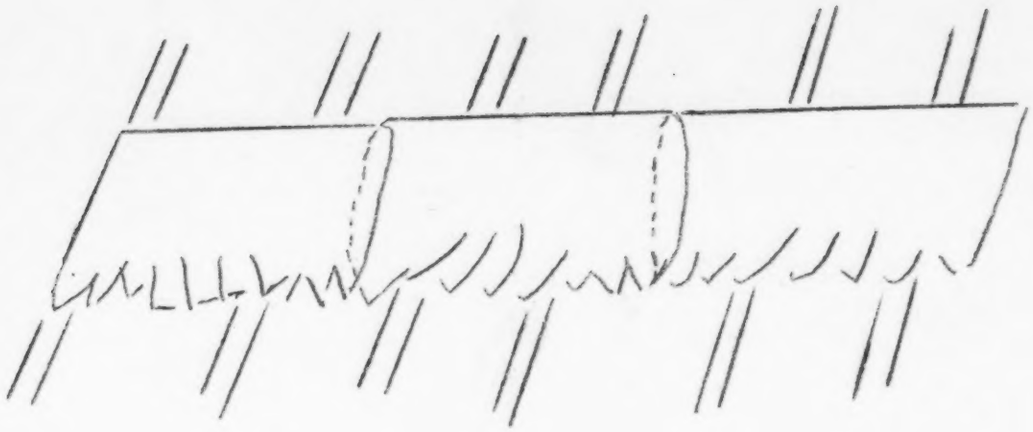


Figure 77.--Position of thatch sheet row in relation to rafters.

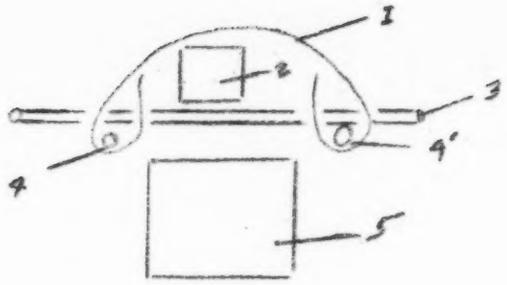


Figure 78.--Arrangement of capping thatch sheets along length of ridgepole. Cross-section. (1) capping sheet bent over secondary ridgepole (2)secondary ridgepole (3) transverse rod of mangrove wood (4) and (4') thatch sheet binding rods (5) ridgepole.

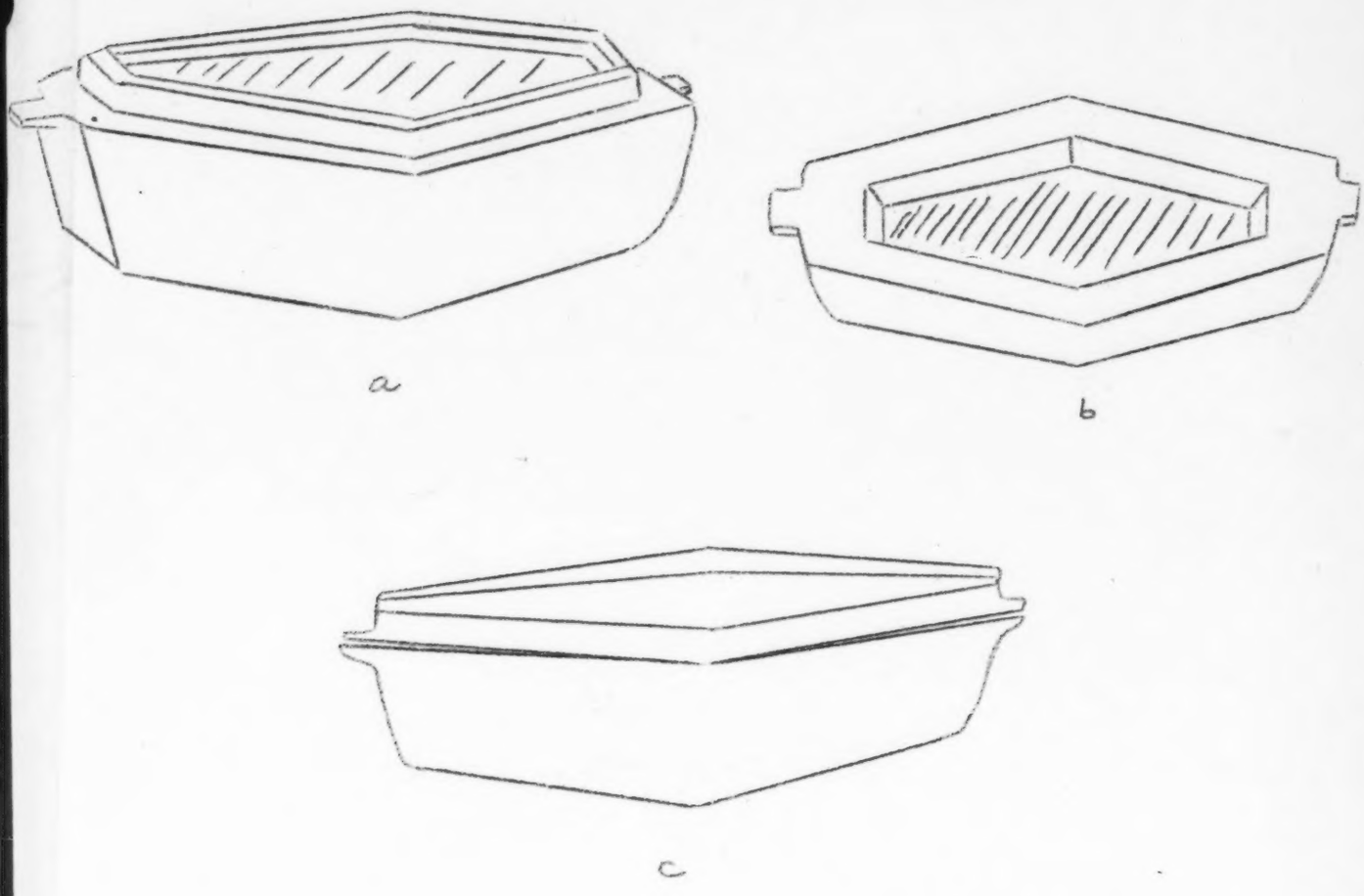


Figure 79.--Wooden chest (sop). a, Body of chest showing mortising to receive lid. b, Underside of lid. c, Body and lid together. From specimen Number 55712, Peabody Museum Harvard.

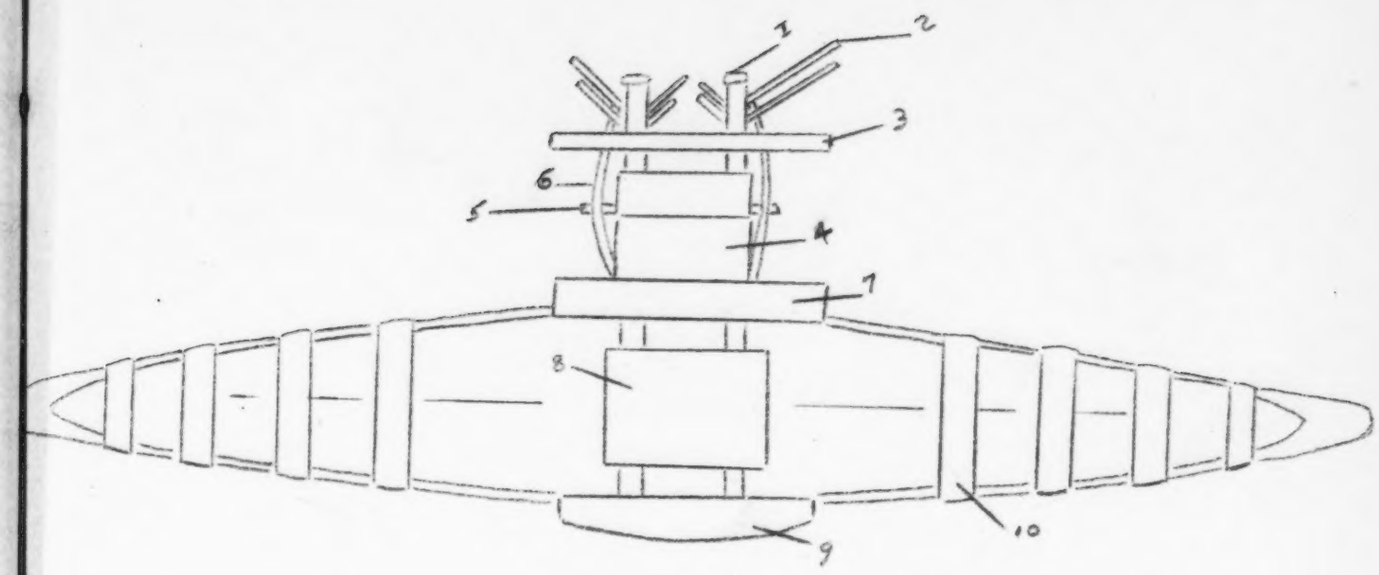


Figure 80.--Small fishing canoe (wa fötyn), looking down on hull and outrigger. Float not shown. (1) boom (2) stanchion (3) cross piece (waaiso). (4) outrigger platform (cötöcötörarau). (5) longitudinal stringer (waatippu). (6) diagonal stringer (ceeteam). (7) cross piece (mesenap). (8) removable board (maatyng). (9) weather-side board (tinikäsä). (10) thwart.

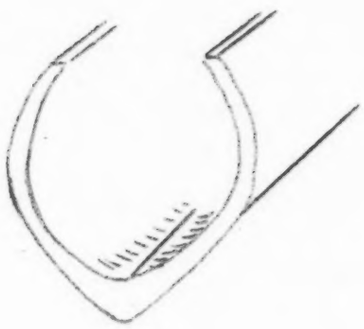
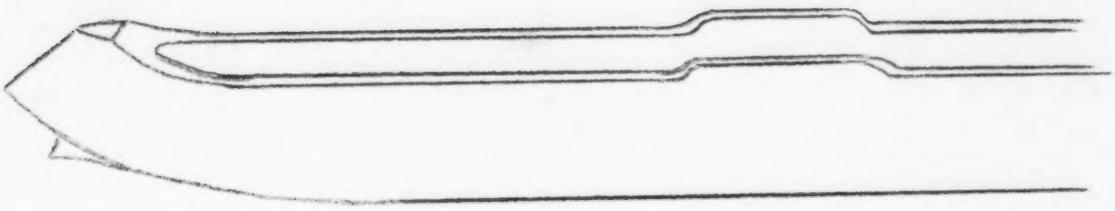


Figure 81.--Cross-section of hull. Small fishing canoe (wa fötyn).



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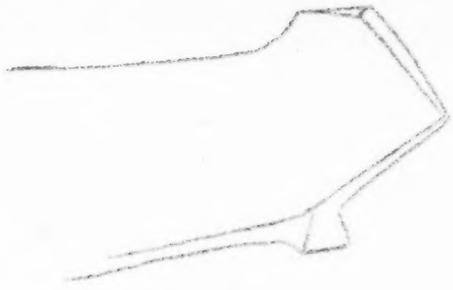


b

Figure 82.--Hull of small fishing canoe (wa fötyn), side and end views.

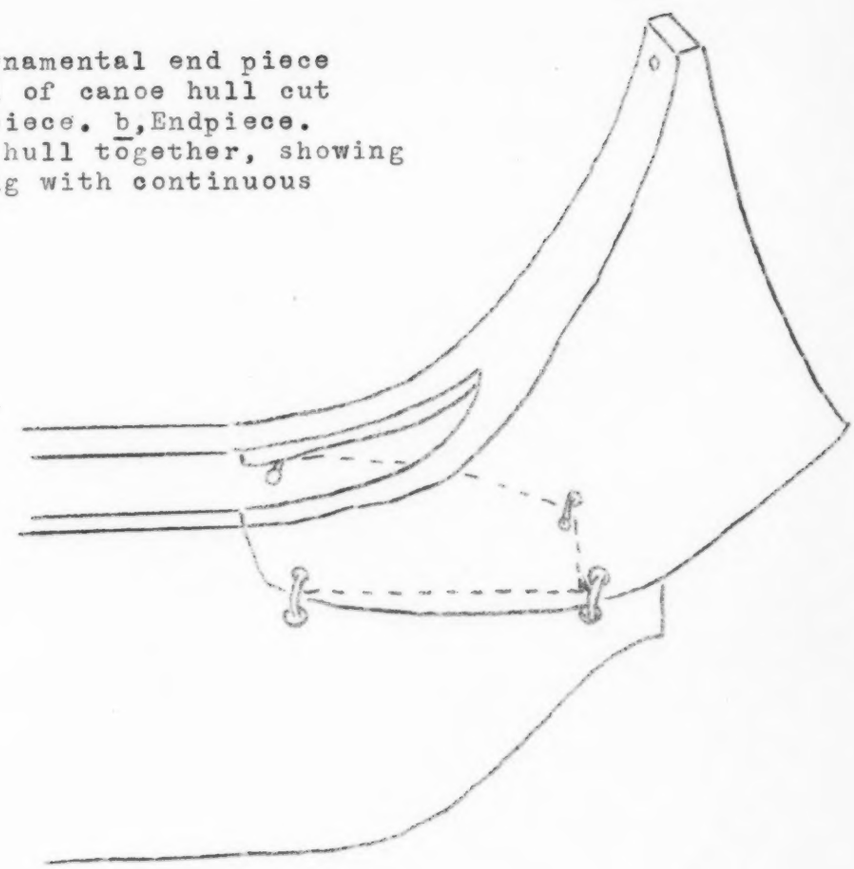
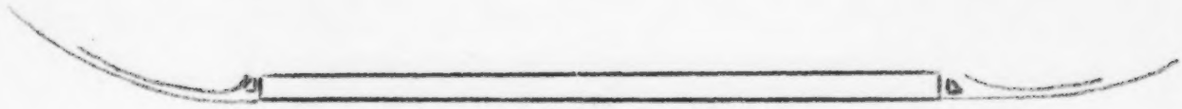


Figure 83.--Ornamental end piece (sòpposă). a, End of canoe hull cut to receive end piece. b, Endpiece. c, End piece and hull together, showing method of lashing with continuous line.



a

b

Figure 84.--Undercuttingalong keel line, small fishing canoe (wa fɵtyn). a,Side view showing fɵt bounded on either end by nɵɵng. b,Cross-section of hull, showing undercut on either side, along keel line.

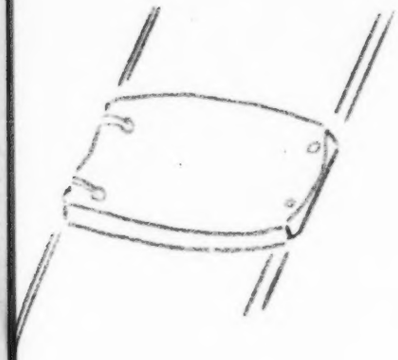


Figure 85.--Thwart (sɵ), showing method of lashing to hull.

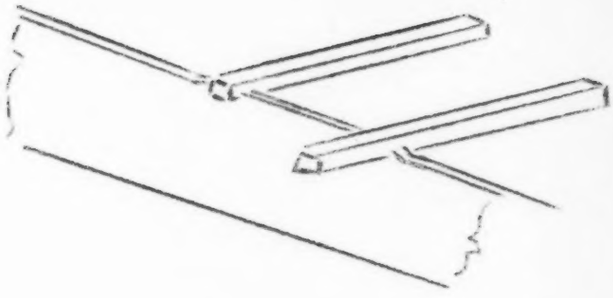


Figure 86.--Midsections of gunwales slightly raised and notched to receive outrigger booms.

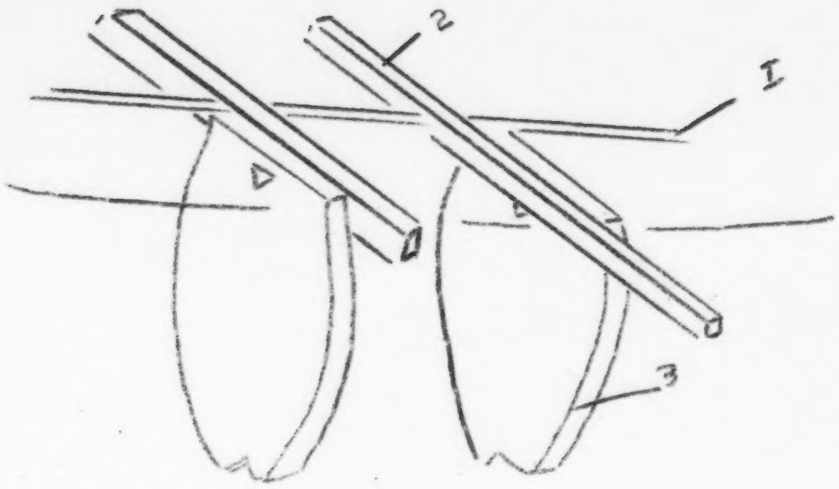


Figure 87.--Showing two bulkheads lashed to either boom. (1) gunwale (2) outrigger boom (3) bulkhead (kuup).

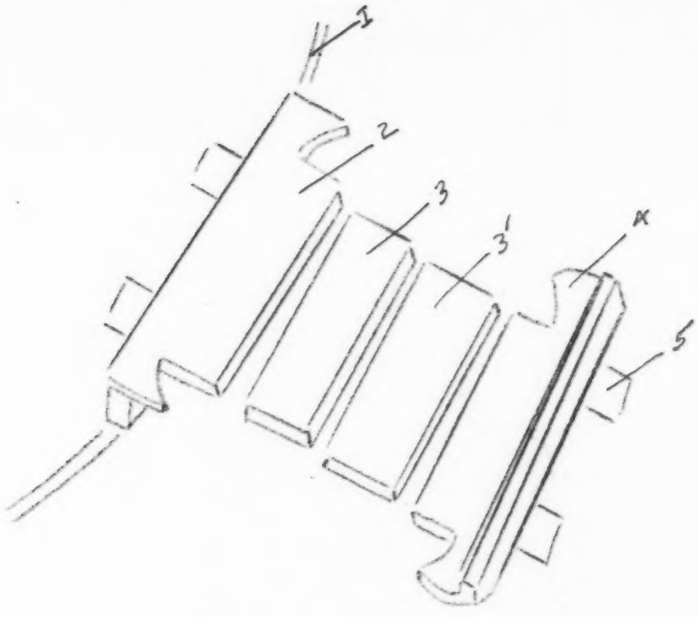


Figure 88.--Boards constituting the outrigger platform. (1) gunwale (2) proximal board (mesenap). (3 and 3') median boards (cɞɞcɞɞrarau). (4) distal board (waaiso). (5) outrigger boom (kiɞ).

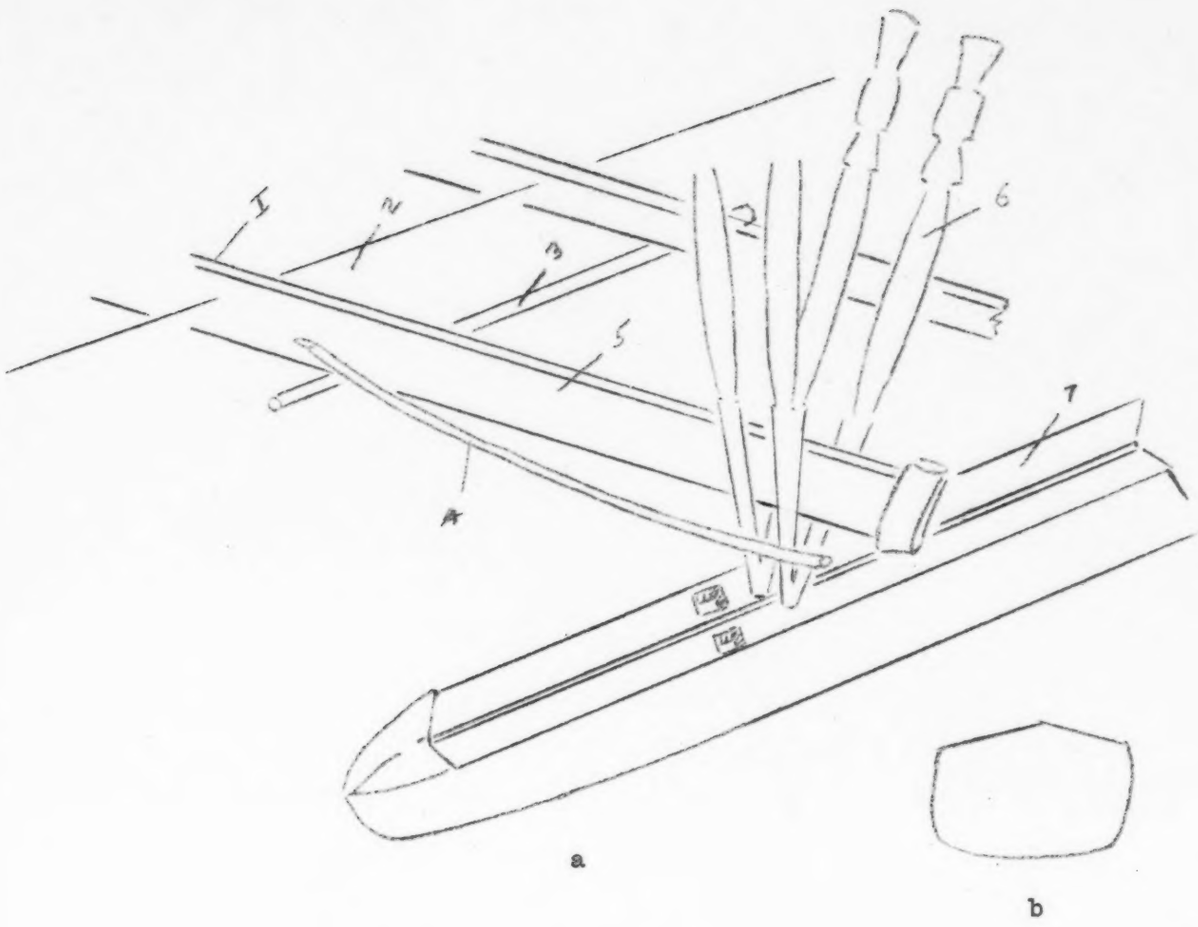
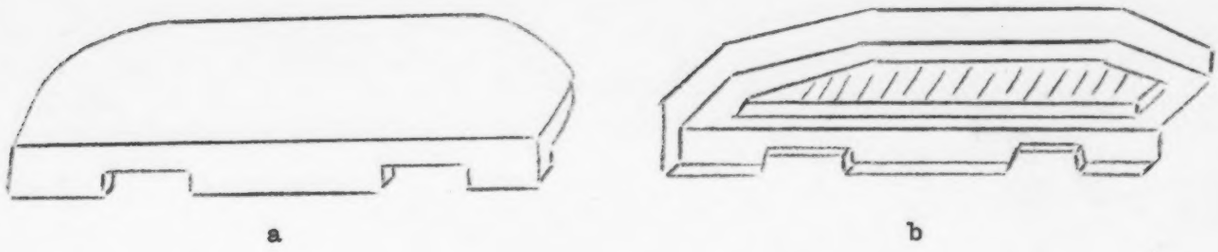


Figure 89.--Arrangement of booms, stanchions, stringers, and float. (1) inner section of outrigger boom (2) side of hull (3) longitudinal stringer (waatippu). (4) diagonal stringer (ceeteam). (5) outer section of outrigger boom (6) stanchion (7) float. b, Cross-section of float.



a b

Figure 90.--Weather-side board (tinikäsä). a, Top view, looking out from hull, showing notching to receive outrigger booms. b, Variation of underside, showing ridge around outer edge.

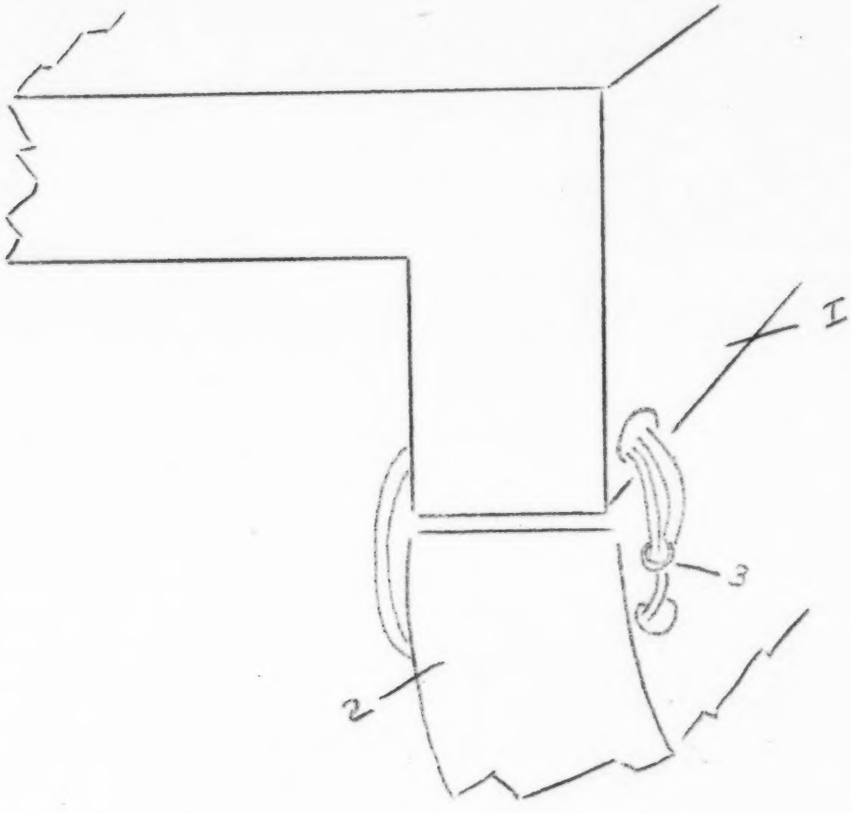


Figure 91.--Lashing weather-side board (tinikäsä) to gunwale. (1) weather-side board (2) gunwale (3) slip-knot.

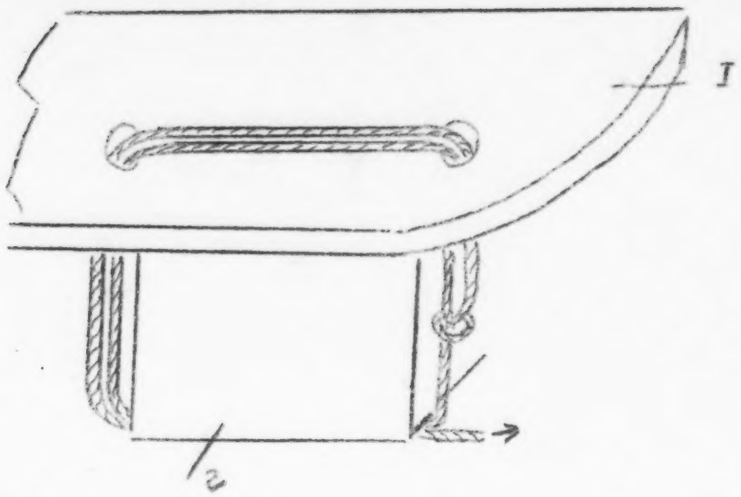


Figure 92.--Alternative method of lashing weather-side board (tinikäsä) by passing line through holes in face of the board and passing around the outrigger boom beneath. (1) weather-side board (2) boom

Figure 93.--Outrigger boom (kiö). Showing slight narrowing at distal end. Carved decoration on distal end.

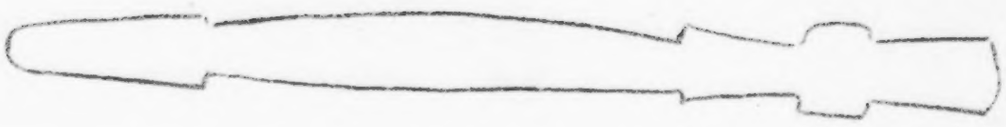


Figure 94.--Typical shape of outrigger stanchion (aam). Top end at the right.

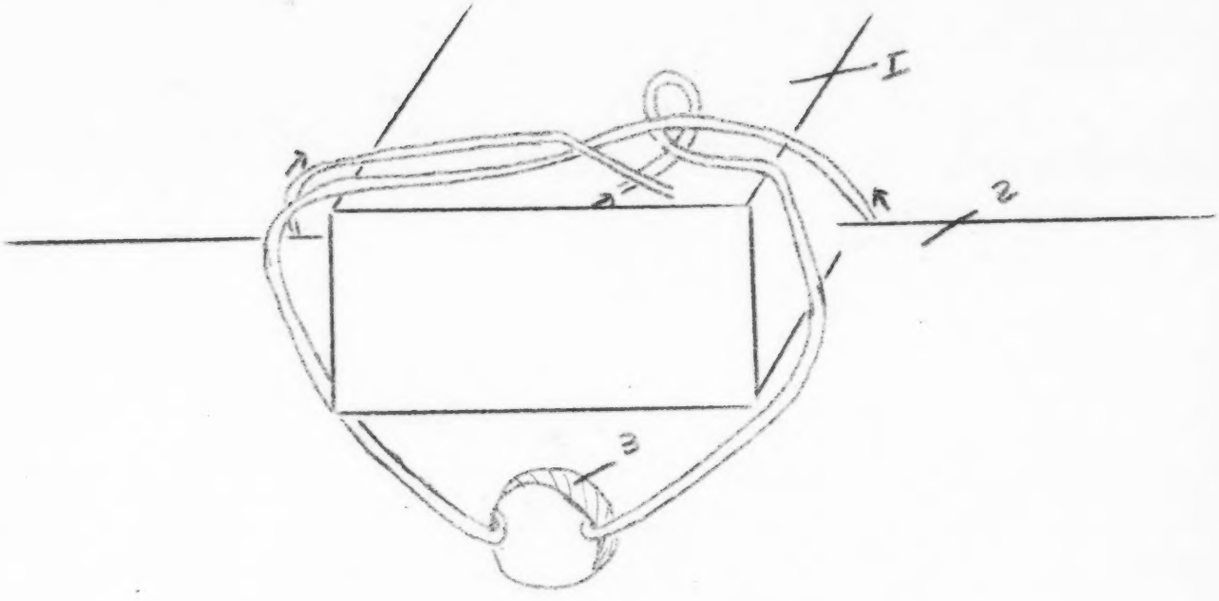


Figure 95.--Lashing boom to gunwale. (1) boom (2) gunwale (3) hole in side of hull a few inches below boom.

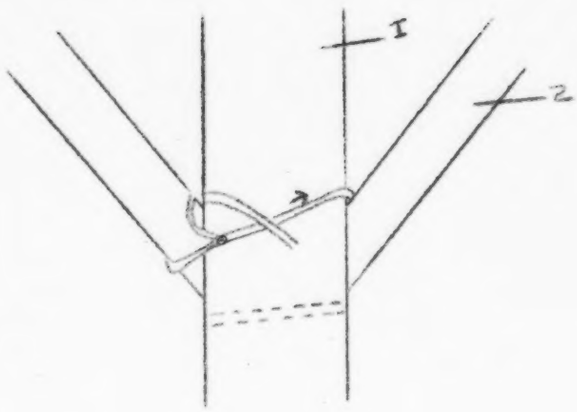


Figure 96.--Commencement of lashing stanchion to outrigger boom. (1) boom (2) stanchion.

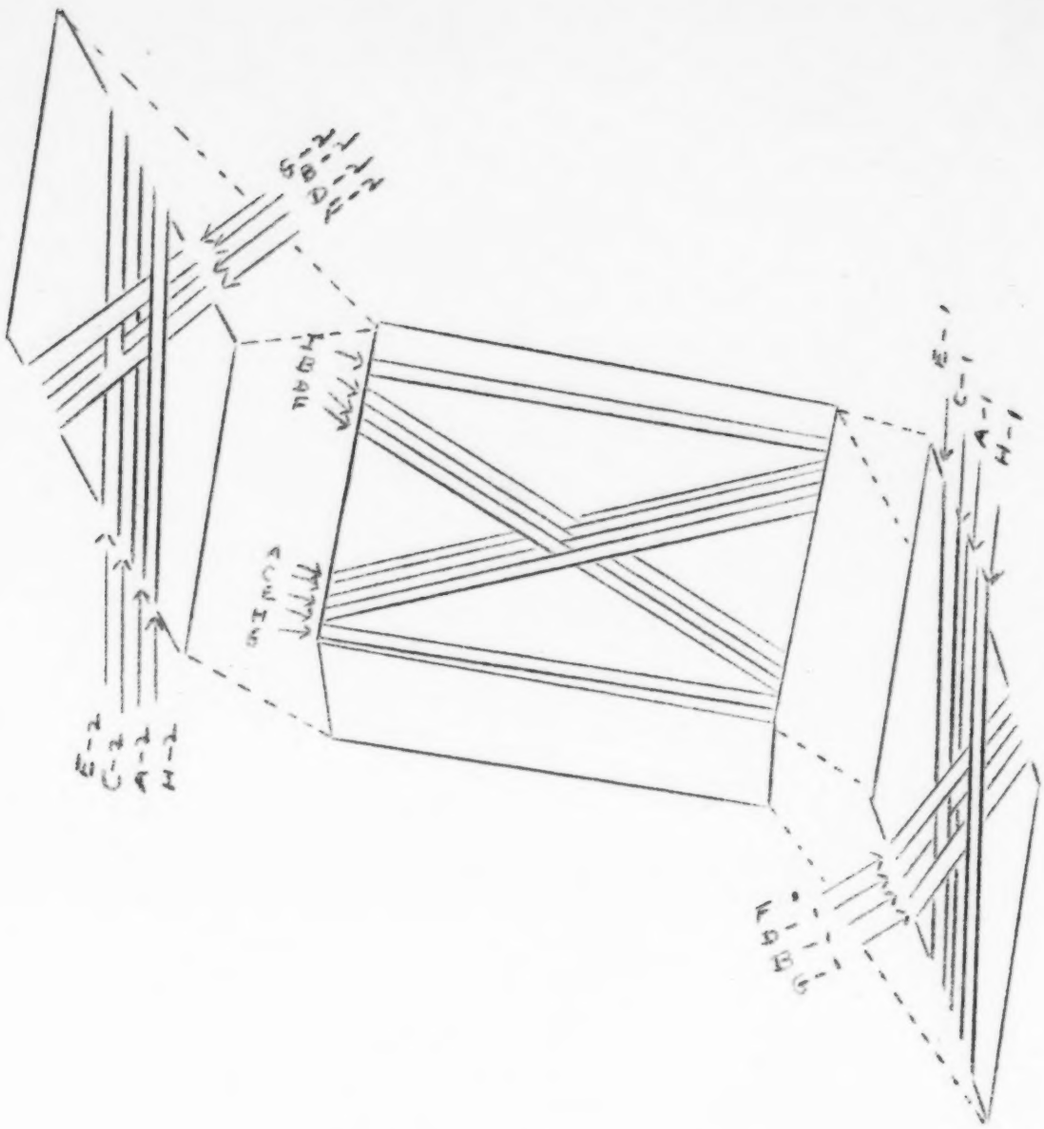


Figure 97.--Lashing stanchions to boom. Schematic drawing showing outsides of stanchions projected on either side of boom, with lines arranged to form an ornamental diamond-shaped pattern on either stanchion.

Following the initial five or six winds, the line (F-2) reverses the previous trend of placement thus forming the second side of the diamond on the left stanchion. Line (G) reverses the direction of wind. Line (G-1) reverses the direction of placement on the right stanchion thus forming the third side of the diamond on that stanchion. Line (G-2) re-establishes the trend of placement on the left stanchion thus forming the second side of the diamond. Line (H) re-establishes the direction of wind. Line (H-1) reverses the trend of placement again thus completing the diamond on the right stanchion. Line (H-2) reverses the trend of placement on the left stanchion thus completing the diamond pattern there. All lines underneath the boom are straight and there is no crossing.

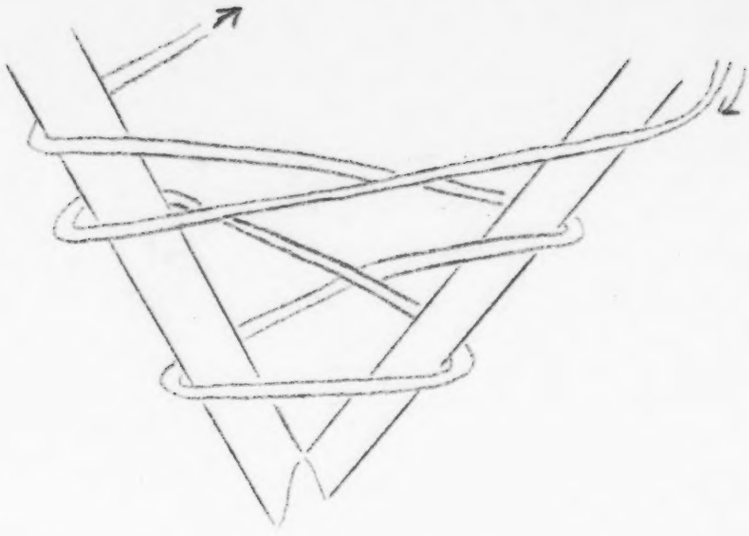


Figure 98.--Lashing stanchions to outrigger booms. Showing portion of outside set of stanchions below boom, and turns of line about them before passing to inside set of stanchions.

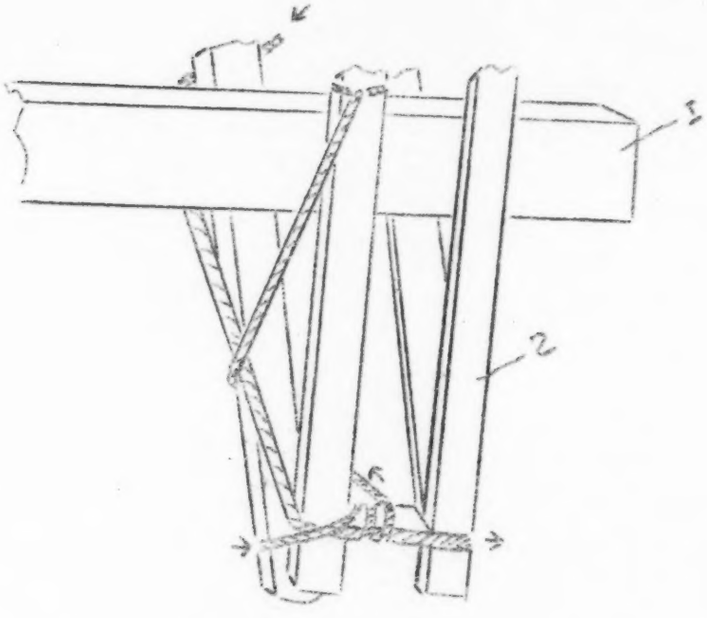


Figure 99.--Lashing stanchions to outrigger booms. Final securing of lines by winding about a chip of wood inserted between stanchion feet and knotting about one stanchion just above the boom. (1) boom (2) stanchion.

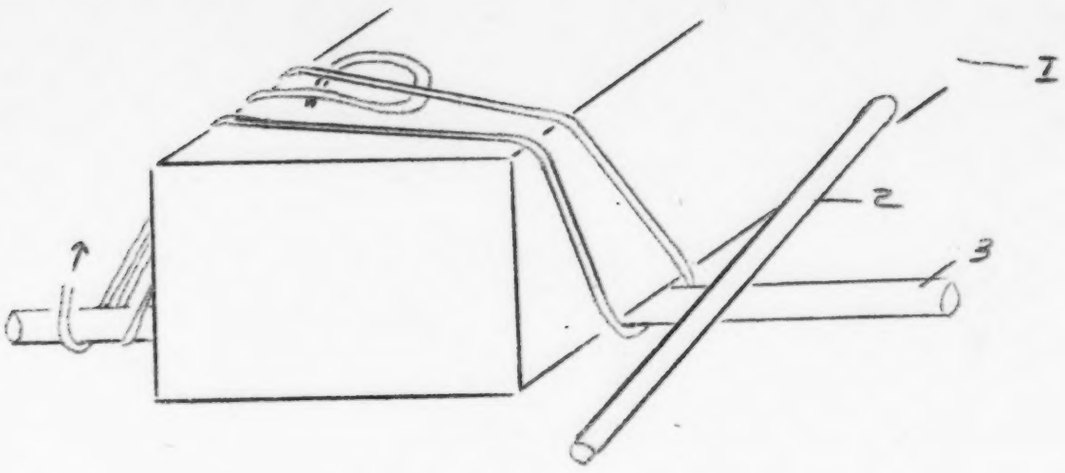


Figure 100.--Lashing longitudinal stringer (waatippu) and diagonal stringer (ceeteam) to outrigger boom. (1) boom (2) diagonal stringer (3) longitudinal stringer.

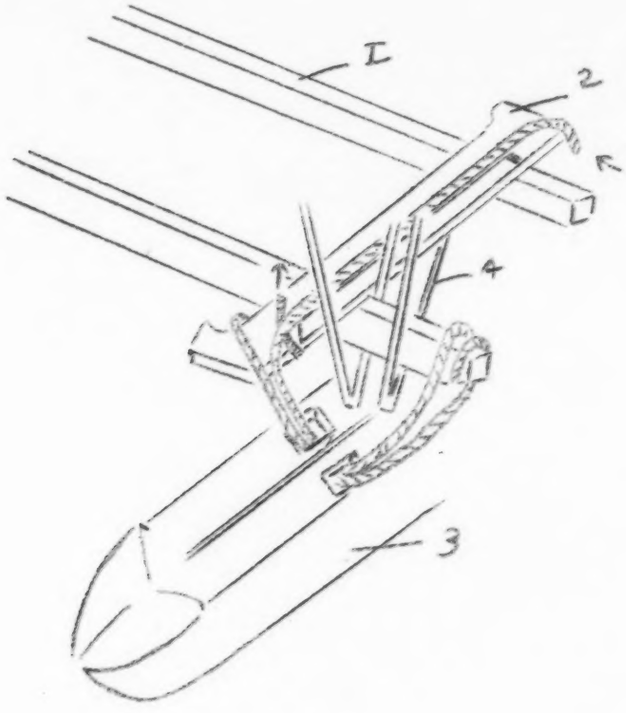


Figure 101.--Lashing float to booms. (1) boom (2) distal cross piece (waaiso). (3) float (4) stanchion.

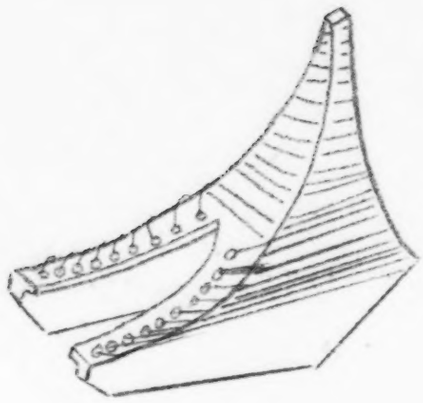


Figure 102.--Decorative lashing on end piece (*sapposa*).

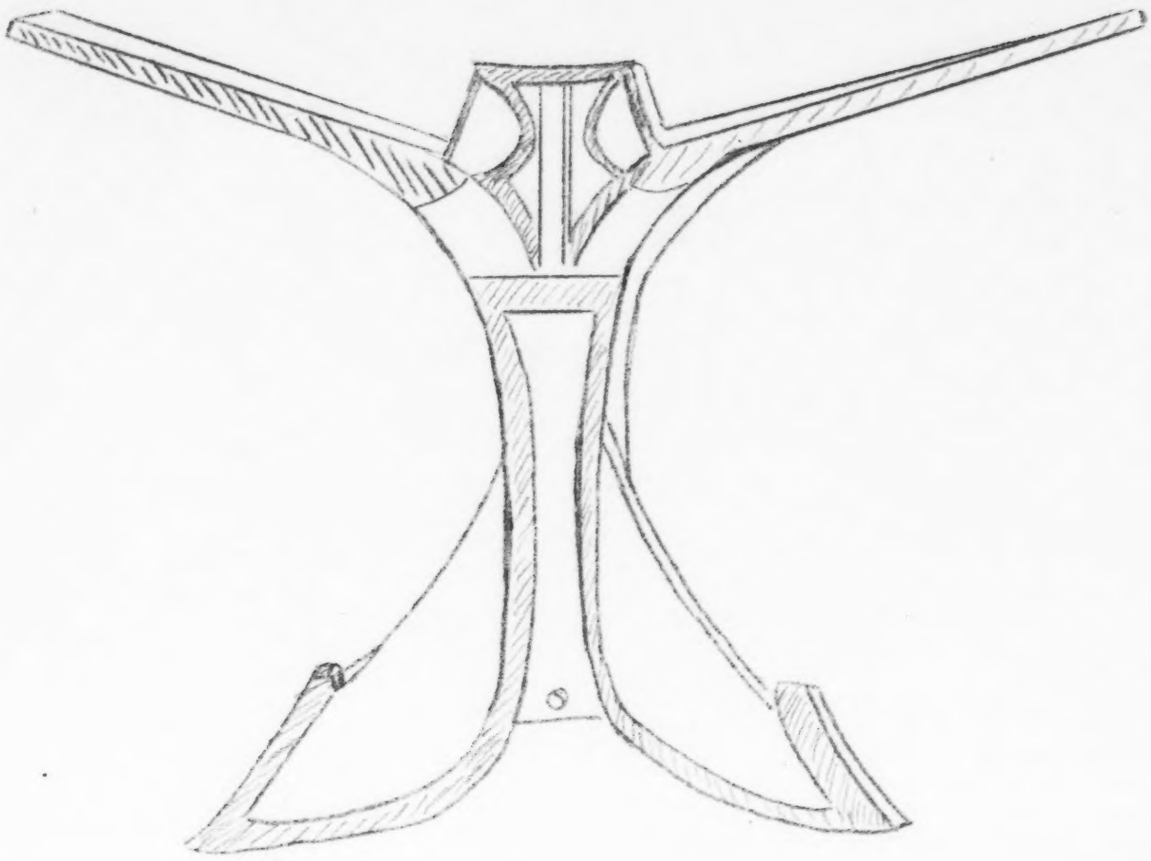


Figure 103.-- Ornamental canoe figurehead (ǣcen). Cross-hatched areas are raised slightly and painted black.

Figure 104.--Palm leaflet decoration along gunwales of canoe (<u>öppörön wa</u>).

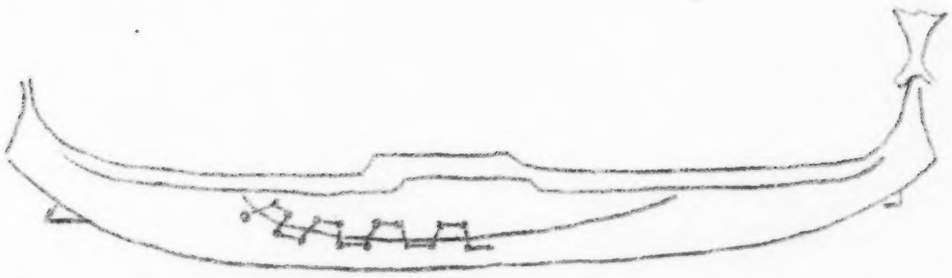


Figure 105.--Washstrakes added along midsection of hull. Lashing with continuous line through holes made in pairs, one in hull and one in washstrake.

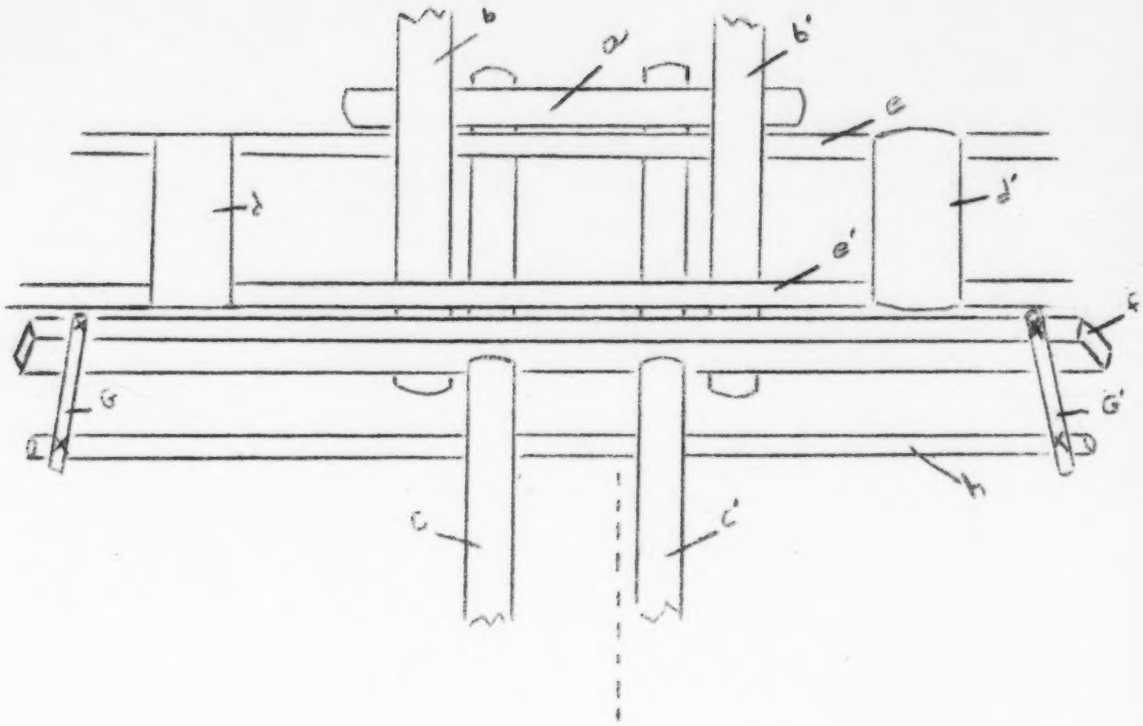


Figure 106.--Suggested reconstruction of Kramer (1932:238, fig. 199). Top view showing arrangement of weather platform booms on meniepep canoe. (a) weather-side board (bb') weather platform booms (cc') outrigger booms (dd') thwarts (ee') gunwales (f) mesenap (gg') stringers (h) vënilu.

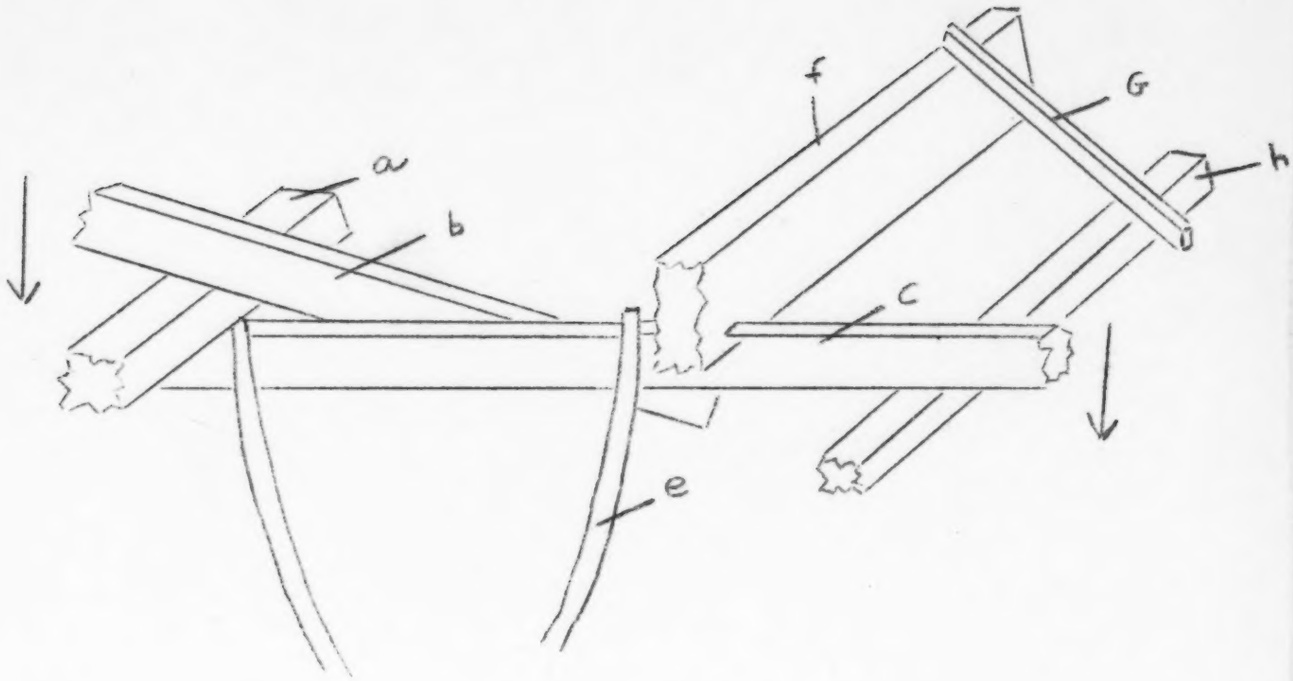


Figure 107.--Suggested reconstruction of Kramer (1932:238, fig. 199). Cross-section at point indicated by dotted line in figure 106. (a) weather-side board (b) weather platform boom (c) outrigger boom (e) gunwale (f) mesenap (g) stringer (h) vënilu.

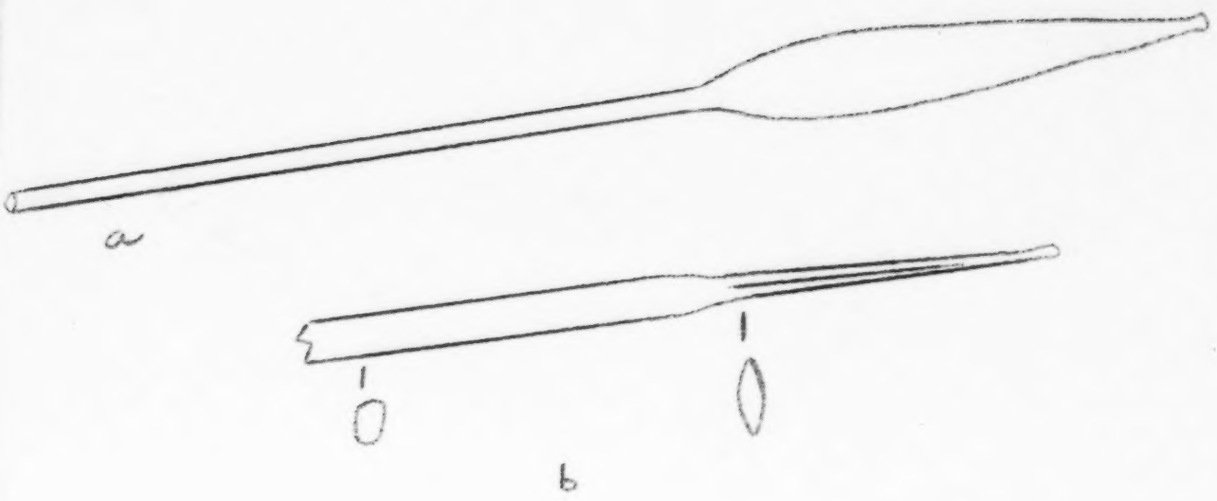


Figure 108.--Canoe paddle (fötynen wa). a, Top view. b, Side view showing portion of loom and all of blade.

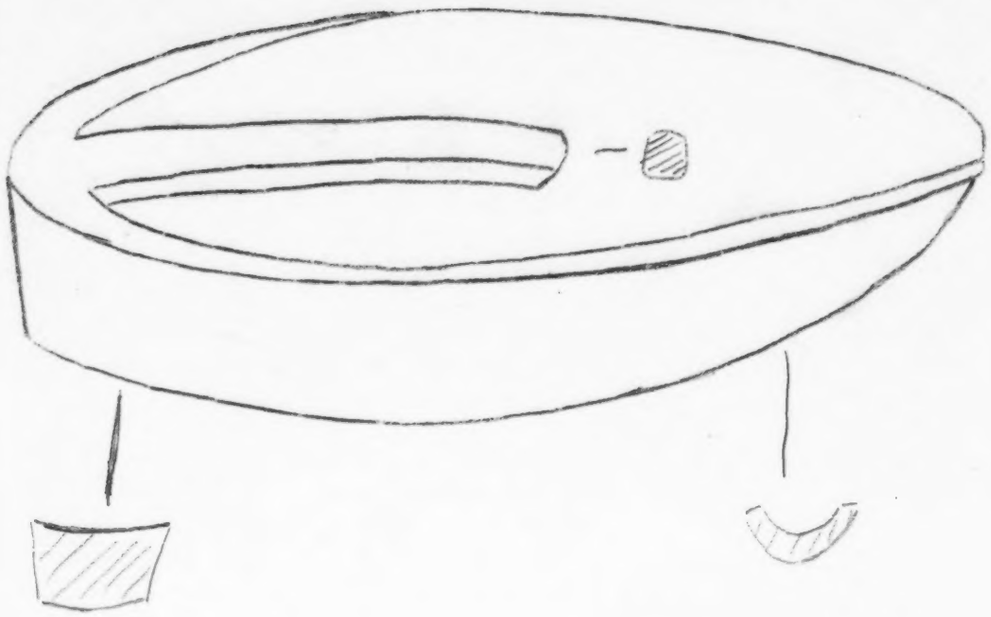


Figure 109.--Canoe bailer (nuum).

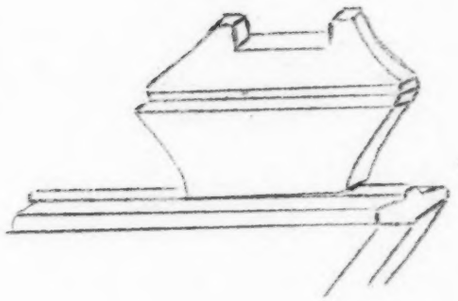


Figure 110.--Model of ä̈ä̈wö̈n type canoe figurehead.

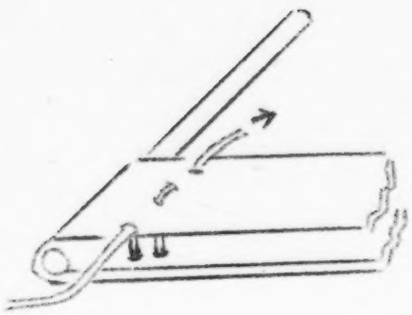


Figure 111.--Pandanus hat (saaim). First leaf and initial row of stitches.

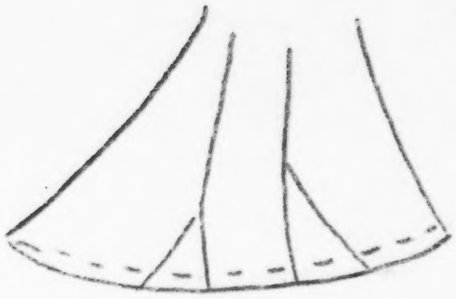


Figure 112.--Pandanus hat (saaim). Arrangement of leaves.

Figure 113.--Pandanus hat (saaim). Top leaf wrapping and securing with cord.

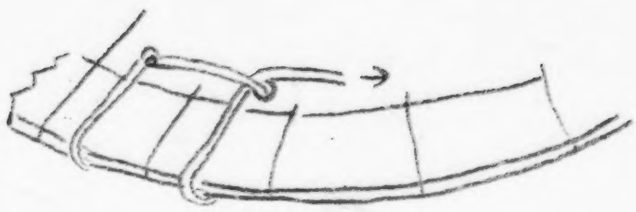


Figure 114.--Pandanus hat (saaim). Wrapping a pandanus leaf strip around the base of the finished hat. A hole is punched in the body of the hat just on the inside side of the pandanus leaf strip. Hibiscus fiber thread is passed down through this hole, brought up around the outside of the base foundation piece (waan saaim), and secured to the standing line with an overhand knot. It is continued to the right and the process repeated through a second hole punched in the body of the hat, etc.

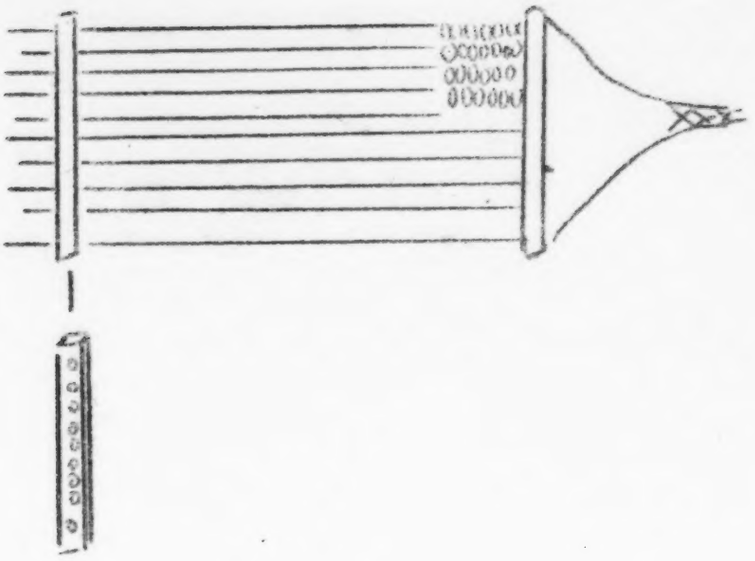


Figure 115.--Woman's belt (kin). Showing one end of belt.

Figure 116.-- Turtle shell arm band (nikum).

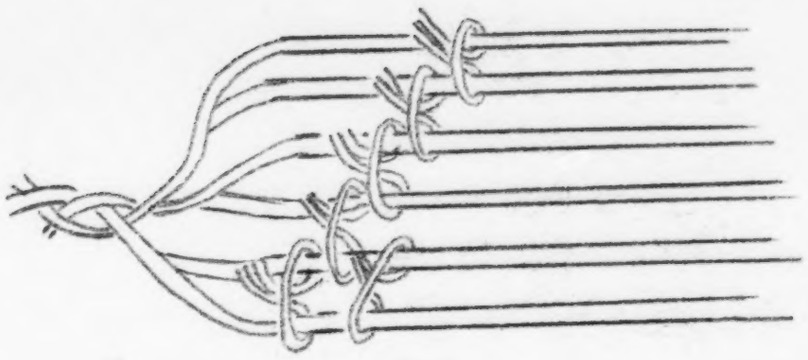


Figure 117.--Man's head band (nakasäka). From specimen number 55751, Peabody Museum Harvard. The tufts are tied on slightly diagonally across the warps and spaced close together so that the loose ends which stick up above the warp form a compact mat, which when cut off even resembles the nap on a rug. In this specimen the warps are six in number and are made by braiding together coconut fiber strands. The two ends of the warp are each carried out in a three-ply braid which is knotted at the end with an overhand knot. The warps are 11 in. in length, the braids being the same length.

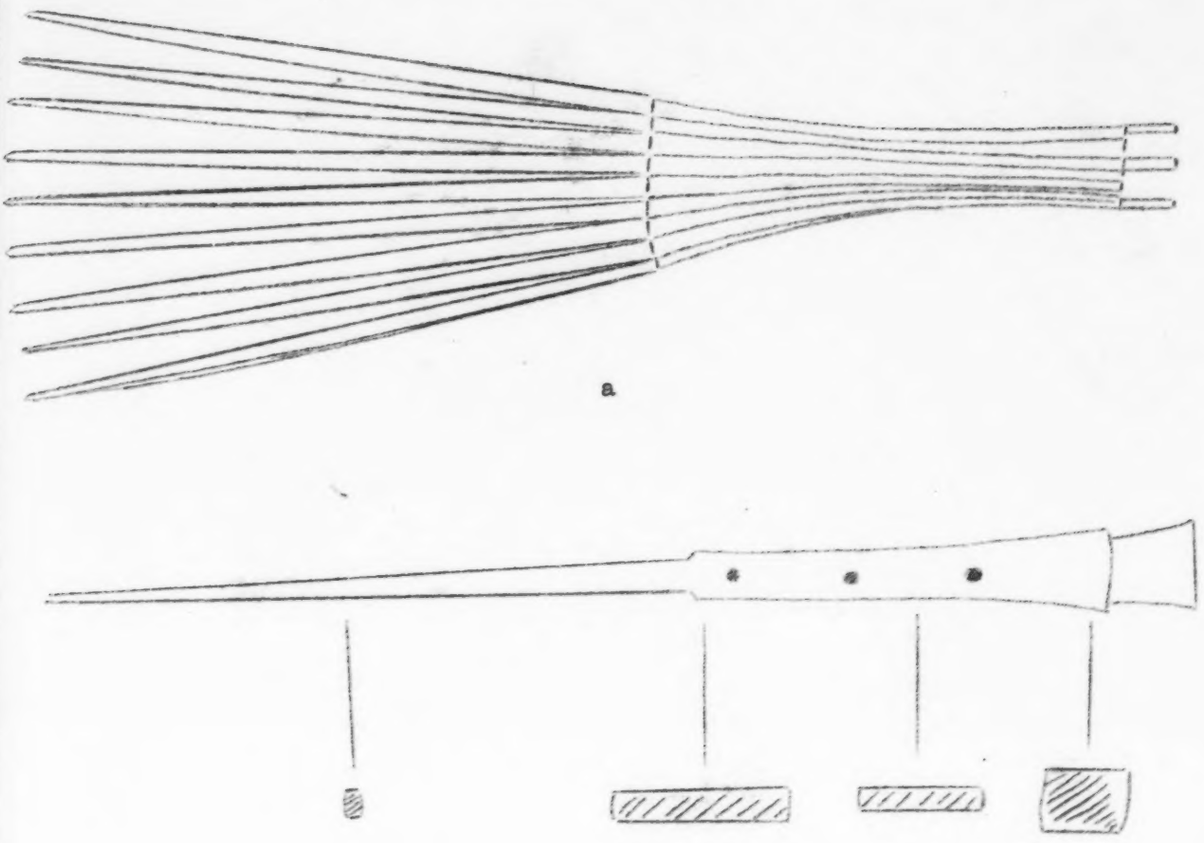
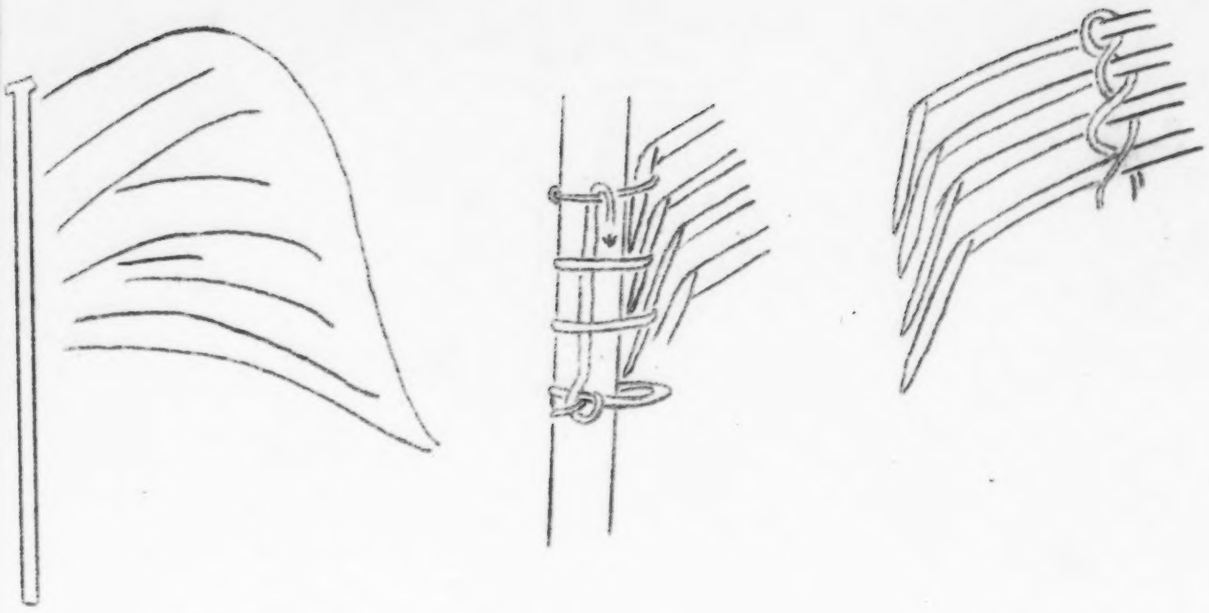


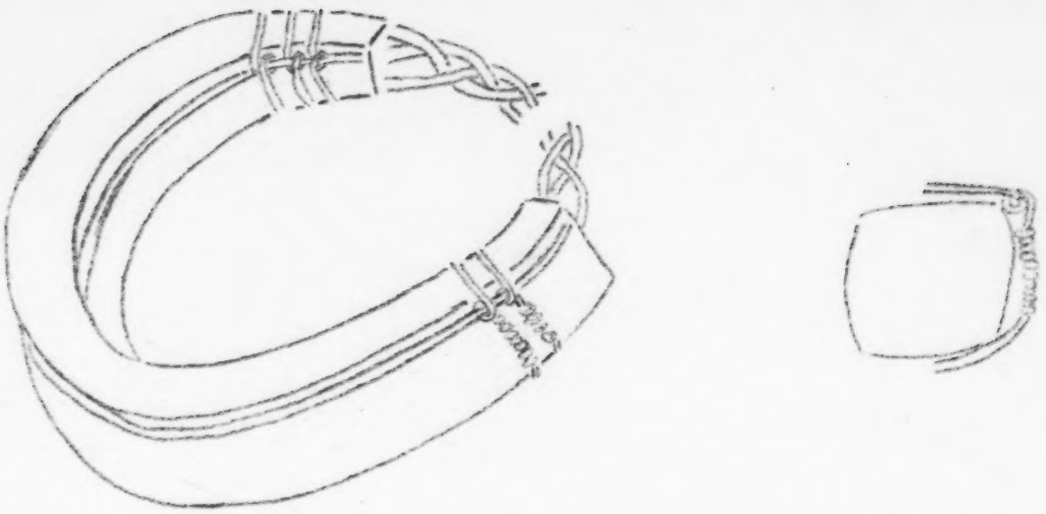
Figure 118.--Wooden comb (cy). a, Top view. b, Side view, showing ends of three transverse wooden pins which hold together the individual elements of the comb.



a b c

Figure 119.--Feather ornament (epico) for attachment to wooden comb (cy). a, The mangrove wood stick is 8 1/2 in. in length and 3/8 in. square. The ends of the quills are bent along the longitudinal axis of the stick. b, Each quill is lashed to the stick by one turn of a continuous line of two-ply hibiscus fiber cord, each quill overlapping slightly the preceeding one. The line is then passed once horizontally about all standing lines in order to tighten up on the lashing. c, At a point just proximal to the beginning of the feathers, a continuous two-ply hibiscus fiber line is lashed about all quills in order to help hold the individual feathers in their relative positions. The center part of the line is bent around one of the end quills and the two working ends are then crossed alternately about each quill.

From specimen number 55722, Peabody Museum, Harvard.



a b

Figure 120.--Woman's head band (nimwam). a, Method of stringing beads along front of piece by utilizing a continuous line, which makes a full turn about two longitudinal lines, front and back. b, Cross-section, showing shape of core and position of lines and beads.

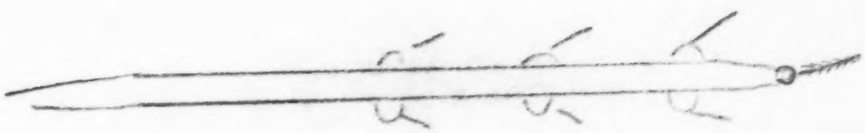


Figure 121.--Spear with attached sting ray tails (niauppwec). Length, 11 ft. Average diameter of shaft, 3/4 in., tapering slightly toward either end. Three pairs of ray tails, set at intervals of 7 in. Length of end ray tail, 6 in.

From specimen number 55696, Peabody Museum, Harvard.

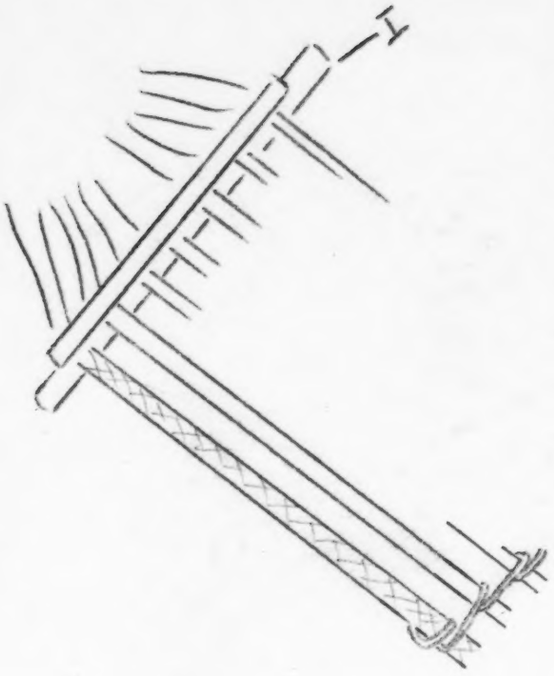


Figure 122.--War sling (eytyn). Method of securing the ends of braided pouch. (1) wooden clamp.

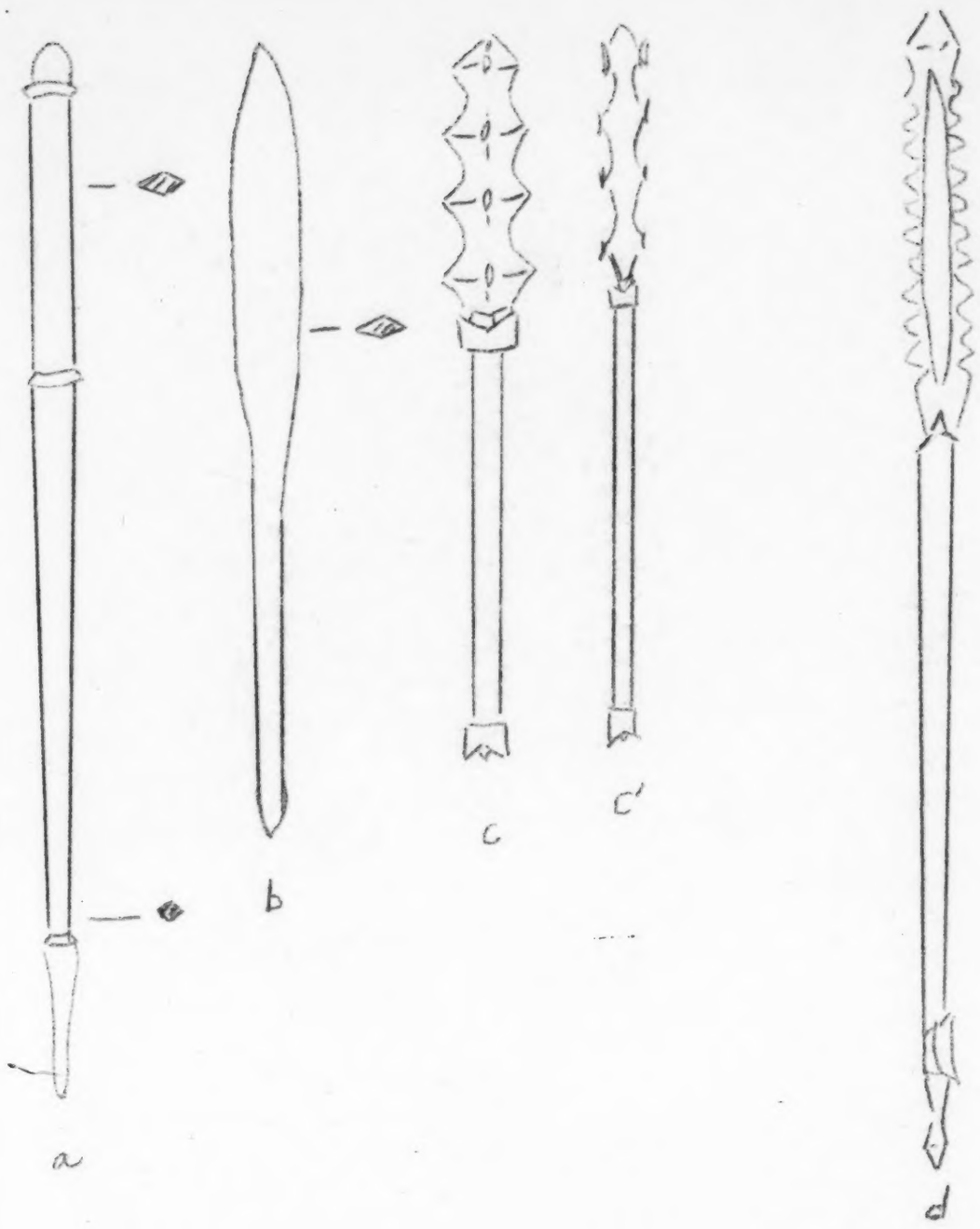


Figure 123.--Wooden clubs (neppweippwei) reproduced from Kramer (1932:158, fig.127 a,b,d,e,f.)

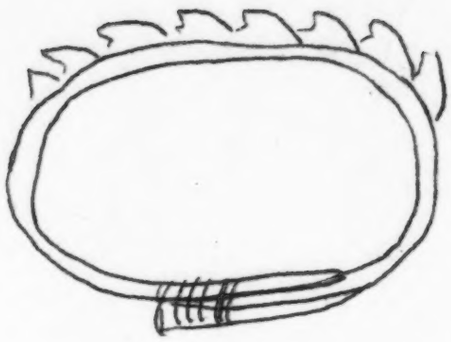


Figure 124.--Knuckle-duster (nikkumuc).

Figure 125.--Knuckle-duster (nikkumuc), showing method of attaching sharks' teeth to foundation pieces.

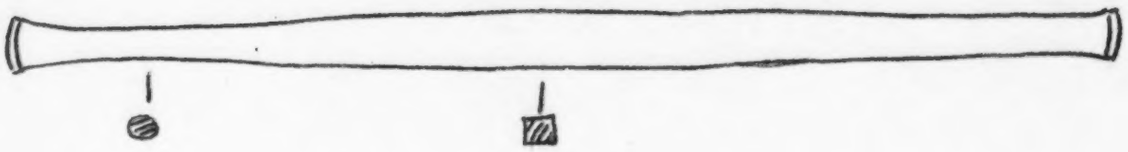


Figure 126.--Dance rod (gurugur). Average length, 50 in. Average diameter, 1 in.

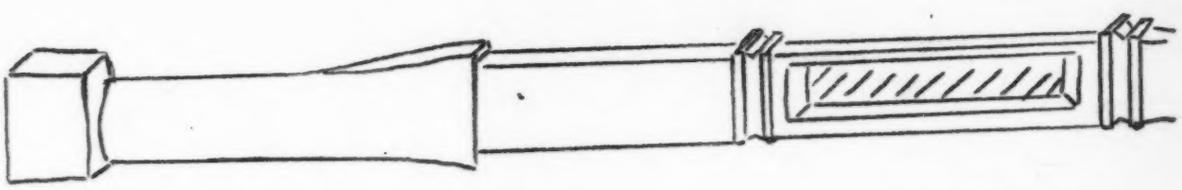
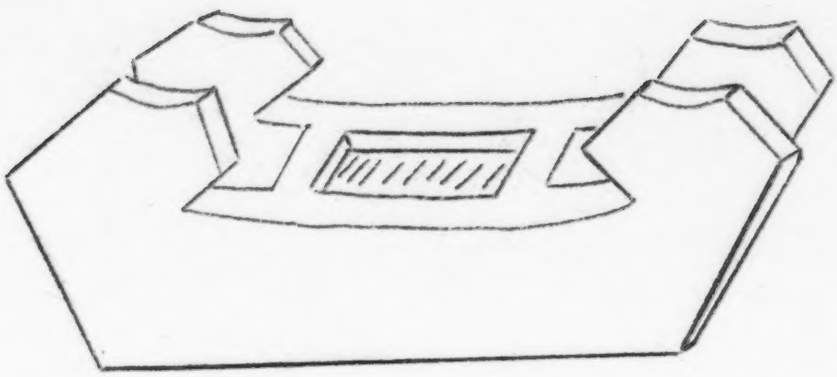
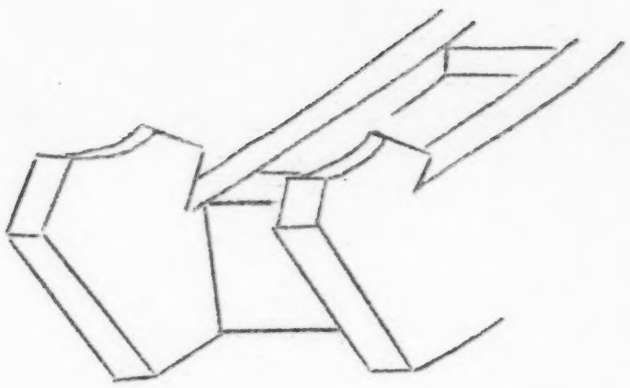


Figure 127.--Love stick (fänei). Average length 33 in. Average diameter, 1/2 in.



a



b

Figure 128.--Receptacle for spirit offerings (nän). a, Side view. b, End view. From a model made on Romonum Island.

ORTHOGRAPHY

The spelling of native words follows the orthography developed by S. H. Elbert (1947), with certain modifications made in the field by Dr. Isadore Dyen on the basis of a preliminary study of the language. The phonemes used, with their corresponding values, are given below.

a -- in father.
ä -- in hat.
e -- in bet.
i -- ee in seen.
o -- in note.
ȯ -- au in caught.
ȯ̈ -- oo in book.
u -- oo in moon.
y -- high central unrounded vowel. u sount without lip rounding and pronounced back in the throat.
j -- semi-vowel, before initial i,e,ä,ȯ̈,a,ȯ.
c -- in much.
f -- in full.
k -- finally and initially like k in kill; medially like g in gun, except when doubled, in which case like k in packing.
m -- in many.
mw -- substitute m for t in twin.
n -- initially like n in now; midially, a flap consonant like t in bitter, except when doubled, in which case like n in finding.
ng -- in singing.
p -- initially like p in park; medially suggests b, except when doubled, in which case like p in topping.
pw -- substitute p for t in twin.
r -- strong trill.
s -- in sand.
t -- initially like t in take; medially suggests d, except when doubled, in which case like t in detail.
w -- in with.
Long vowels are doubled.

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